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and Petroleum Industry

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IN THIS ISSUE

To combine in one location all the facilities of its scouting, editorial, draughting and photographic departments, California Oil World, effective April 1, will be established in larger quarters in the 939 South Broadway Building.

This unification of facilities will prove of particular benefit to the many readers of California Oil World whose practice it has been to visit the publication's offices in quest of information and other services. The increased accessibility of the California Oil World's services should make the publication's offices more than ever the Clearing House for California oil men.

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March 11, 1941

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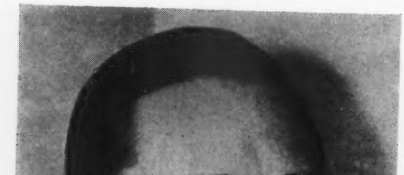
Authors and Abstracts of A. P. I. Papers

at Spring Meeting in Los Angeles

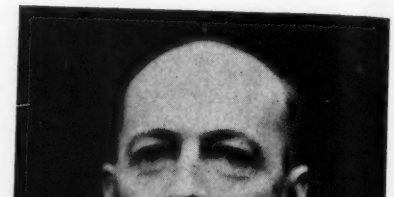
Arthur H. Young who spoke on Industrial Relations at the dinner session, entered the personnel field through his interest in the development of safety programs in the Illinois Steel Co. and in the United States arsenals and navy yards during the World War. He was manager of industrial relations at the International Harvester Co. from 1918 to 1924 and was director of Industrial Relations Counselors, Inc., from 1924-1934. Then he was vice president in charge of industrial relations for the U. S. Steel Corp. from 1934-1937 when he retired. His "retirement" in California consists of growing lemons at Carpinteria, being president of the Chemical Industries of California and Visiting Lecturer in Industrial Relations at the California Institute of Technology from 1939 to date. Mr. Young was active in the organization of the Industrial Relations Section at Caltech.

Robert D. Gray was graduated from the Wharton School of Finance and Commerce at the University of Pennsylvania. From 1928-1937 he was research associate in the Industrial Research Department at the University of Penn-

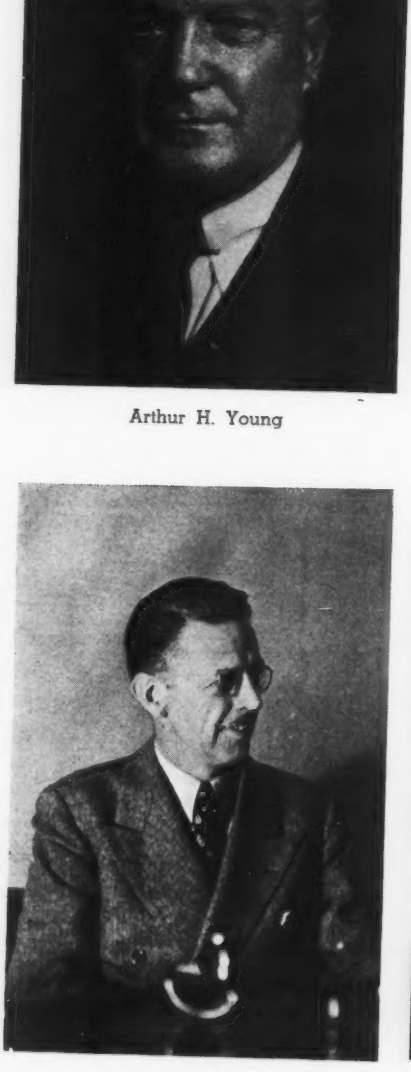
Arthur H. Young



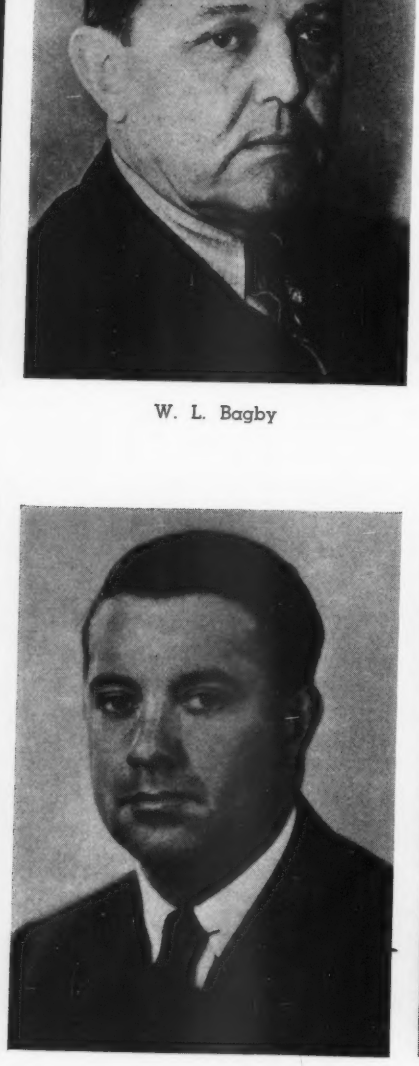
W. L. Bagby



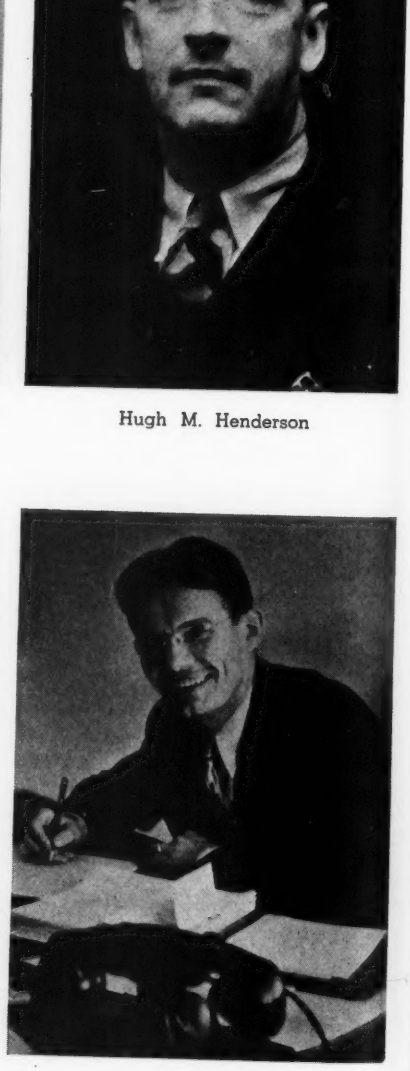
Hugh M. Henderson



A. H. Bell



Benton Turner



Norris Johnston

sylvania and from 1934-1937 was instructor in geography and industry in the Wharton School of Finance and Commerce. From 1937-1940 was assistant professor of economics at the University of Connecticut. From 1940 to date has been associate professor of economics and industrial relations in charge of the Industrial Relations Section of the California Institute of Technology.

Benton Turner, petroleum engineer, Drilling and Exploration Co. "Recent Equipment for Paraffin Removal, Perforation Cleaning, and Well Completion".

Mr. Turner received B. S. Degree from the Mackay School of Mines, University of Nevada in 1932. After several years of work as a roustabout and roughneck in the Kettleman Hills and Taft areas, returned to the University of California at Berkeley, in 1935. Received M. S. degree in petroleum engineering the following year. Elected an associate member of Sigma Xi in 1936. Company affiliations 1934-1935, roustabout Standard of California at Kettleman Hills; 1936, engineer Hopper Machine Works, Bakersfield; 1937, engineer Dodge Mfg. Co.; 1938, engineer General Engineering Dept. Standard of California; 1939, Drilling and Exploration Co.

Hugh M. Henderson, producing equipment engineer Standard of California: "Recently Developed Method for the Inspection of Tubular Goods and Sucker Rods." This paper describes the equipment used and the method of using it, together with illustrations and charts showing the results obtained. The

E. J. Bartosh
Chairman Pacific Coast Program Committee

R. N. McMaster
Chairman Pacific Coast Division of Production

equipment is designed to afford the operator some means of determining the remaining usefulness of his tubular goods and sucker rods after they have been in service for a period.

Connected with Standard of California in capacity of engineer since 1920. A. B. and Engineer's degree from Stanford University.

Norris Johnston, physicist, General Petroleum Corp. "Core Analysis Interpretation." Paper held up for publication after Mid-Year meet at Tulsa in May.

"Core analysis in an attempt to find the amount of space in a subsurface reservoir that is available for oil and gas, how much of this space is actually occupied with oil and gas, and how much of it may be recoverable by various means, and how best to design those means of recovery. It will be evident to the critical reader that the broad use of core analysis data involves many assumptions regarding fluid content and movement in a reservoir. A section has therefore been added discussing the present state of knowledge on which the necessary assumptions must be based, and what must be done to improve this state of knowledge."

Born May 9, 1902, Morgantown, West Virginia—University of Minnesota 1919-1921; Massachusetts Institute of Technology, 1921-1924, B. S. electrochemistry; MIT 1924-1925, M. S. physics; Caltech 1926-1929, Ph. D in Physics.

W. L. Bagby, Shell Oil Co., retired, paper "Vocational Training in Oil & Gas Production."

Mr. Bagby has been very active in the affairs of the API and held the office of chairman of the Coastal district from 1925 through 1938. He is particularly interested in vocational training for the oil workers and has been largely responsible for the installation of vocational guidance courses sponsored by the API in the schools of California located near oil fields and refineries. Recently he retired as division supt. of Shell's Coastal division after 27 years service with the company.

Victor J. Beissinger, assistant chief petroleum engineer of Richfield Oil Corp. Paper "Some Factors Which Influence the Choice of Drilling Equipment." Abstract: see page 6.

A. H. Bell, general superintendent Continental Oil Co. of California. "Voluntary Curtailment Program of California Oil Producers."

The author has attempted to make this paper primarily suitable as reference for the history of curtailment and the formula now in use. As an introduction the paper covers fundamental reasons for overproduction and the necessity of curtailment as a conservation measure.

The history of voluntary curtailment in California from 1922 to the present is covered in detail and is followed by a full description of the curtailment organization as now constituted. This is followed by a complete description of the formula now in use in California for arriving at well allowables. The

E. W. Webb
Chairman Calif. Topical Committee on Drilling

T. H. Acres
Chairman Calif. Topical Committee
on Production

Walter L. Duhig
Chairman of General Arrangements
Committee

conclusion strikes a note of optimism for the degree of curtailment needed in the future together with a plea for full support of the voluntary system in order that it may survive.

"Ham" Bell started in the oil industry with Associated Oil Co. in the engineering department at San Francisco in 1915 and later transferred to Bakersfield. He went to Oklahoma in 1918 to join Empire Gas & Fuel Co. serving in both refinery and production work in Kansas, Oklahoma and Texas. Last position held was chief production engineer, which was resigned in 1921 to join Pierce Oil Corp. as chief engineer of manufacturing dept. He headed program of reconstruction of Pierce refineries in this country and Mexico.

In 1926 he returned to California as chief production engineer for Marland Oil Co. of California. Following the merger with Continental Oil Co. in 1928 he was appointed general superintendent in charge of drilling and production in California for Continental. During 1938 Continental drilled the world's deepest well to 15004 ft. at Wasco., Calif.

Mr. Bell is a director of Kettleman North Dome Assn., and California Natural Gasoline Assn. He is a past chairman of the API Pacific Coast District and is at present chairman of the Conservation Committee of California Oil Producers.

T. A. O'Donnell Recuperates at Palm Springs Home

Thomas A. O'Donnell, veteran California oil man and first president of the American Petroleum Institute, is reported resting well at his Palm Springs home after a slight illness.

Houston Oil Show Off Until 1943

The Oil World Exposition has voted to postpone its next show at Houston, Texas until the spring of 1943, and hold it every four years there after. The next show had been scheduled for next spring, but conflicted with that of the International Petroleum Exposition at Tulsa, Oklahoma, which will be held in May 1942. Efforts to get the latter show to agree to a two year alternate plan, so that each show would be held once every four years, were unsuccessful.

Congratulations, Ron

Our nomination for the happiest California Oil Man is Ron C. Smith of H. C. Smith Oil Tool Co. who was presented with a brand new son by his wife and a brand new oil well by R. R. Bush Oil Co. Needless to say, Ron's bits did all the drilling.

Brantley Scholarship to Two Brazil Geologists

Geonisio Carvalho Barrozo and Luis Chavez, Brazilian geologists, have started studies in the petroleum engineering department of University of California, Berkeley. Their studies in this country have been arranged through a scholarship provided by J. E. Brantley, president of Drilling and Exploration Co., which is conducting exploratory operations for the Brazilian government at Bahia and Maceio, Brazil.

A. A. P. G. Meet In Houston in April

American Association of Petroleum Geologists announces its twenty-sixth annual convention, to be held at Houston, Texas, April 2 to 4, 1941. The meeting will include three days of technical sessions, a business meeting, and a dinner dance on the night of April 3.

Hydril Announces Two Promotions

Allan S. Hicks, of the Hydril Co., has taken over the job of California sales manager in addition to his duties as manager of export sales. He will make his headquarters at the Lomita, Calif., factory of the Hydril Co., and will handle both California and export sales from that place.

Allan S. Hicks J. B. Hughes

Mr. Hicks has a thorough knowledge of Hydril products and their relation to operating conditions because of his many years of service with the Hydril Co. as field engineer in California, Texas, and Oklahoma. Two years ago he made a trip of many months' duration in the Near East, Burma and the Netherland East Indies, and took an extensive trip through South American fields last year. He has been with the Hydril Co. for more than 10 years.

Jas. B. Hughes of the Hydril Co. has assumed his new duties as district engineer attached to the Texas Division of the company. Mr. Hughes was formerly in charge of field service for the Hydril Co. at Odessa, Texas, where he spent about two years. From Odessa he was transferred to California where he worked as field engineer in the Bakersfield area. Now promoted to the position of district engineer, he will make his headquarters at Houston, Texas, but will expand his activities throughout Texas and Louisiana.

Nomads Hold Inaugural Dinner

The Second Annual Inaugural Dinner Dance of the Los Angeles Chapter of Nomads in honor of its new and retiring officers was held at the Wilshire Country Club on Friday evening, February 14. Guests included foreign visitors as well as oil company and equipment men, and music was by Mickey Whelan's M.G.M. orchestra.

The new officers of the Nomads are: E. B. Fowks, Emsco Derrick and Equipment Company, president; W. F. Bettis, M. O. Johnston Oil Field Service Corp., vice-president; Earl M. Rees, Oil Well Mfg. Co., secretary-treasurer; Elmer R. Smith, Lane-Wells Co., assistant secretary-treasurer; R. J. Eiche, sergeant-at-arms; and Roy Hitchcock, H. & B. Sales Co., deputy sergeant-at-arms. Regents elected to the national organization are T. Sutter, Baker Oil Tools, Inc., and W. F. Bettis. The retiring officers are T. Sutter, Baker Oil Tools, Inc., president; S. R. Bowen, S. R. Bowen Co., vice-president; W. F. Bettis, M. O. Johnston Oil Field Service Corp., secretary-treasurer; E. M. Rees, Oil Well Mfg. Co., assistant secretary-treasurer; E. B. Fowks, Emsco Derrick & Equipment Co., sergeant-at-arms; and S. R. Robinson, Yowell Service Co., deputy sergeant-at-arms.

Some Factors Which Influence the Choice of Drilling Equipment

By Victor J. Beissinger
Richfield Oil Corp.

Presented at the
Spring Meeting of the Pacific Coast District
A. P. I. Division of Production
Los Angeles, California
March 11, 1941

ABSTRACT

Rather than to attempt a detailed survey of all the factors which might influence the selection of individual units of drilling equipment, this paper is concerned primarily with an exposition of the major factors which govern the choice of whole drilling outfits. The mechanics and economy of drilling operations are affected by such factors as program, power, and cost. Fundamentally, cost relationships and effects are truly realistic, and the most advantageous choice of drilling equipment may be substantiated by the cost of its ultimate performance. In order to obtain conclusive regional expression for the most basic cost determinations, the writer has suggested what he believes to be a practical scheme to pool individual company drilling experience records. Only by such a coordination of effort can we secure full information in the light of full perspective. This paper stipulates the nature and importance of the factors which influence the choice of drilling equipment, but the relative weight of these criteria must be determined by much more detailed investigation.

Economics and mechanics are the two most logical considerations upon which the factors which influence the choice of machinery and equipment may be presumed to obtain most realistic expression. To attempt a review of these influences as they might affect the selection of individual pieces of drilling equipment would require far too much detail for the scope of a mere paper. With this in mind, we have limited our discussion to a consideration of the factors of economic significance bearing upon the different types of rotary drilling outfits, on the premise that the mechanics of drilling equipment performance is the real measure of its economic value.

Drilling machinery and equipment has been developed over a rather short industrial period of time, as represented by the relative youth of the oil industry. Keeping pace with world-wide scientific research and discovery called for much individual effort. Today the strongest of economic influences is at work, and the effect of commercial competition is gradually forcing the industry collectively to make use of the most favorable economic and mechanical practices in its field of operation. Railroading, hauling, and automotive enterprises have resorted to a kind of engineering vogue which has been colloquially referred to as "streamlining". Essentially an expression of tangible progress in mechanics through engineering, design "streamlining" is keenly economic and

V. J. Beissinger

sensitive to the most advantageous use of materials. Much publicity has been gained by this restyled solution of an old problem in a new way because the results are so obviously successful. The business of "streamlined" design proved to be a sound economy.

In the broadest sense, "streamlining" is descriptive of a trend, and there was no plausible reason why the oil industry should not follow. The trend is based on the economics of advanced mechanical achievements in weight reduction and space saving design. Oil field machinery and equipment manufacturers have sensed the importance of this change, and the shapes of their products have begun to show signs of symmetry and sleekness. The use of alloys and light weight materials have become more commonly favored. In a still broader sense, the oil industry as a whole has adopted a "streamlined" economic attitude which has been reflected in the practice of drilling new wells in accordance with programs as determined by the estimated economic future of such wells. Thus, a prospect hole receives only enough consideration to furnish the immediate demands involved; this calls for a "slim" hole with benefit of only a minimum amount of surface pipe. Then, there is the practice of development drilling with well programs designed to fit estimated productivity indices. Management is now eager to adopt "streamlined" economic considerations, and the trend is no longer looked upon as a side-show defection. Economic "streamlining" follows the mechanical, and it shall be the purpose of this paper to show that the degree of successful adaptation of the latter is the measure of the extent to which the former may be realized. This paper recognizes the premise that the selection of drilling equipment is distinctly related to and governed by the choice of drilling programs and procedures. Without such limitations to a specific point of view, the author sees no logical approach to such a discussion because of the well-known controversial nature of the entire subject. We believe this to be a practical point of view mainly because it should appeal to the average oil man who knows only too well how strongly any given point of view might influence the development of the average oil country drilling program.

Therefore, the foundation of our point of view shall be the desire of management to obtain certain and definite plans in order to promote the accomplishment of any given drilling program within equally certain and definite economic limits. These limits are generally set by budget prerequisites. Upon such a foundation we shall consider the effective values of the chief factors which might influence the selection of drilling equipment:

1.—as determined by the requirements of drilling programs, and
2.—as affected by the mechanics of optimum adaptation to such requirements of the cost of rotary drilling outfits and the power to run them.

The common denominator for the first consideration should be an expression of useful economic value. For the consideration of individual units of machinery and equipment, the common denominator is always some expression of economic useful life. Each of these measures can be carried on a common yardstick, the cost of performance. Cost is a certain understandable tangible conception. Management, engineering, and field operations are sensitive to its reflections. The selection of drilling equipment for development of 4,000′, 8,000′, or 12,000′ territory, to drill regular or slim holes, to obtain 250, 800, or 1,500 barrels of potential production, which might be curtailed to less than 150 barrels of allowable oil, is governed by a number of localized factors; while

the selection of equipment to drill exploratory wells in widely scattered localities is governed by still another group of equally localized factors. Both can be resolved into terms of cost. Then, following the determination of the kind of outfit best suited for the work, the choice of power must be considered. Power plants for rotary outfits are strictly utilitarian, and as such are comparable largely on the basis of local economic conditions. Because rig machinery and equipment, as well as power plants, are essentially mechanical in operation, it is pertinent therefore that we should stress the most conclusive factor, performance in service. There is no better natural mirror of cost. Individual units of drilling equipment may generate, transmit, or be subject to the load applications of power and the performance of work. The factors which govern the relative values involved are primarily strength of materials and mechanical design. These factors built into a unit of drilling equipment determine its initial, operating, and ultimate cost. We must agree on the old premise that the yardstick of experience is actual performance, and that the ultimate value of any given unit of equipment can be estimated most satisfactorily only when rated in terms of the relative performance of similar units under similar operating conditions. This point of view contends that such a rating of equipment can be arranged on the basis of a generally acceptable unit of performance. We shall suggest, hereinafter, such an expression of economic useful life. Materials, mechanics, and men determine the cost of drilling, and the cost of drilling is the governor which modulates the choice of drilling equipment. Materials and mechanics are subject to the proving ground rules of science and engineering. Men are both guides and interpreters, and as

DUAL PURPOSE LAYOUT DIRECT MECHANICAL ROTARY OUTFIT FOR DEEP DRILLING

FOR SHALLOW DRILLING AND SLIM HOLE WILDCATS USE #9 DRAWWORKS & ENGINE UNIT WITH ONE 18-20" & ONE 14" POWER PUMP ENGINE UNIT AS INDEPENDENT RIG

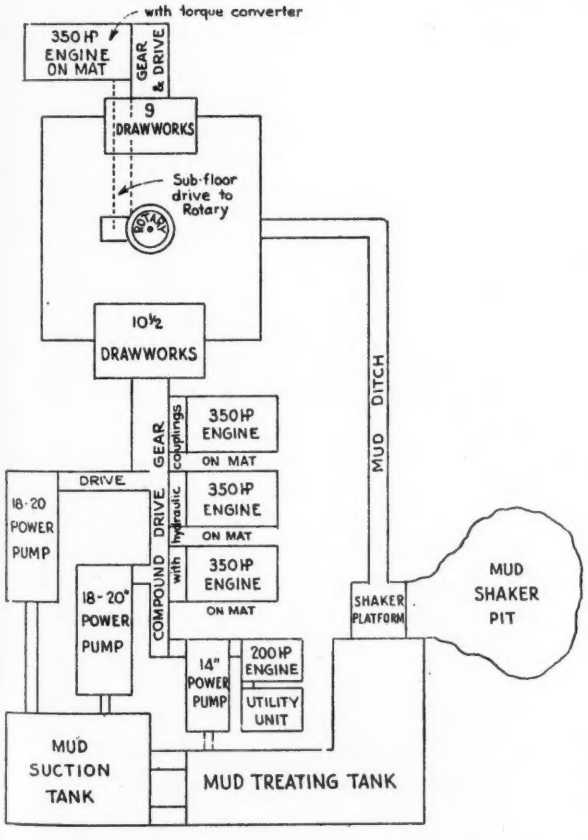


FIGURE I

DUAL PURPOSE LAYOUT STEAM-ELECTRIC ROTARY OUTFIT FOR DEEP DRILLING

FOR SHALLOW DRILLING AND SLIM HOLE WILDCATS USE ELECTRIC UNITS AS INDEPENDENT RIG WITH #9 DRAW-WORKS AND STANDBY ENGINE POWER PUMP

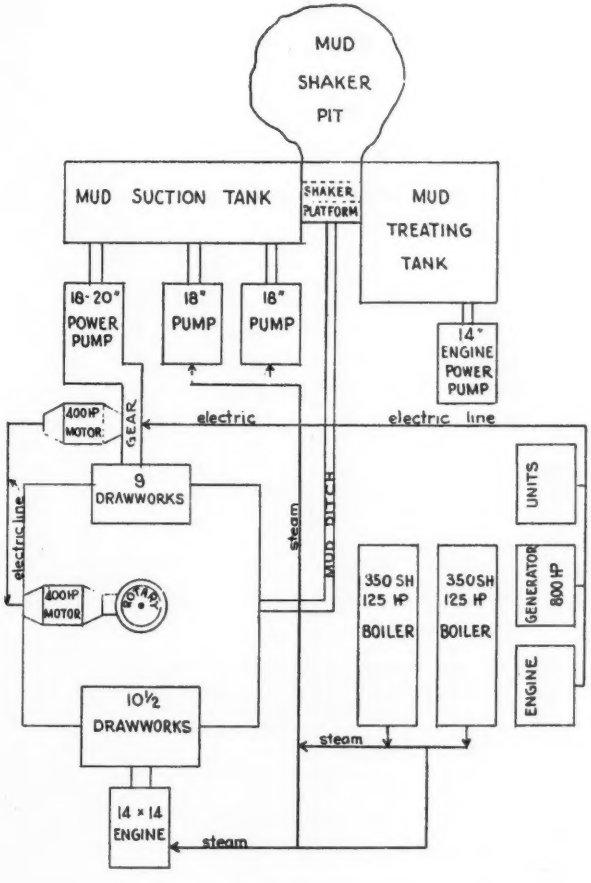


FIGURE II

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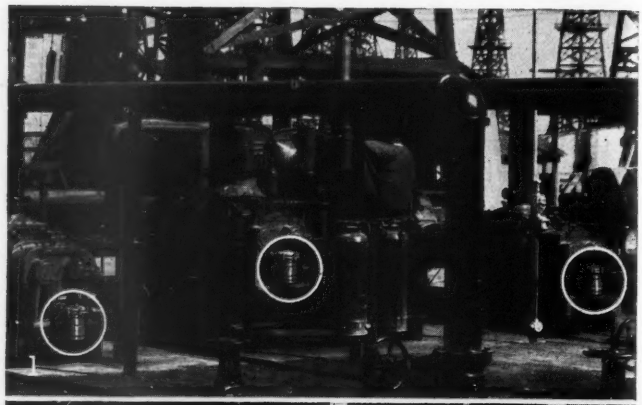
MORE INDUSTRIAL USERS every day are proving the economy of equipping engines with a Luber-finer. Adds to both oil and engine life by keeping lubricating oil refinery-fresh, clean and free from excessive contaminants and acids hour after hour REGARDLESS OF THE DRAIN PERIOD.

There's a Luber-finer model designed to fit every industrial engine; see your Luber-finer dealer. Ask for a demonstration.

In addition to the Standard Refining Pack for all installations, Luber-finer now offers the special DIESELPAK for use with COMPOUNDED DIESEL ENGINE OILS.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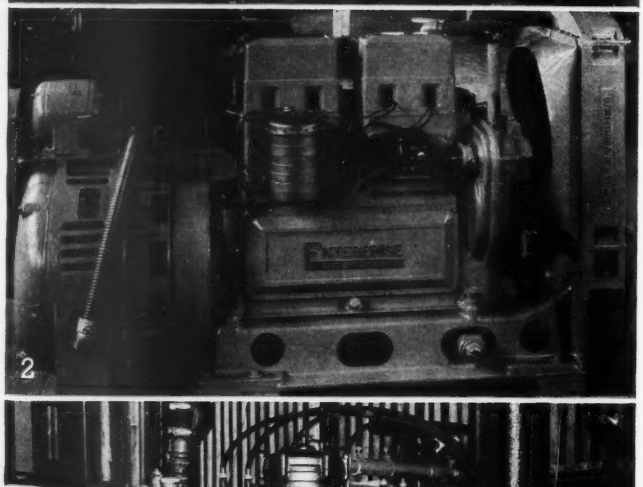
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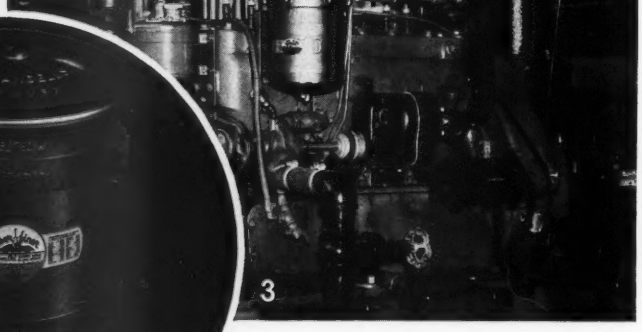
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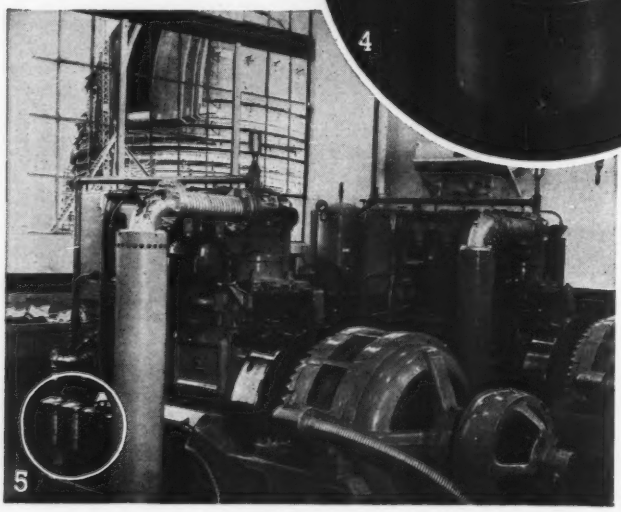
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Above: (1) Major oil companies use LUBER-FINERS in production departments. (2) Enterprise Engine, LUBER-FINER equipped; (3) LUBER-FINER on Waukesha motor; (4) LUBER-FINER Model 750-W. *Left:* (5) Power plant at Mt. Palomar, Calif., Luber-Finer equipped.

Luber-finer

Refines Oil EVERY MILE *as you drive*

LUBER-FINER, INC., LOS ANGELES

such make use of drilling tools and conduct drilling operations with individually characteristic reaction to actual performance costs. The physical evidences of wear and failure of materials in actual service are the field notes which finally find economic expression in the head office.

Substantially, the economics of the selection of drilling equipment is influenced by three predominant factors, Program, Power, and Cost. Because we are limited to a rather meager collection of general oil industry drilling performance data, and because we have insufficient space for consequential detail, this paper will present arguments for a future attempt to accumulate such information as the basis for supplementary studies and reports.

The entire subject may be explained as an analysis of drilling cost accumulation, because the choice of drilling equipment is in reality the chief factor which influences the trend of such costs. Drilling equipment is commonly classified under the heading of Tool Rental for the purpose of cost distribution schedules. As such, it not only accounts for its share of the drilling cost, but directly and mechanically prolongs or shortens the drilling jobs. Direct drilling expenses increase with the prolongation of drilling time, and the efficiency of the drilling equipment, together with the skill of the individual crews, as reflected by the Tool Rental charges, is the most realistic expression of the cost factor.

THE ECONOMICS OF SELECTION

Rotary drilling outfits may be selected on the basis of an analysis of three major factors:

1.—Program, as determined by future production economics.
2.—Power, as selected on the basis of local or areal economics.
3.—Cost, as resolved in terms of economic useful life.

The "streamlining" effects on the economic status of the industry already has influenced the nature of the mechanical considerations to be discussed. The human desires of management can best be satisfied today by the investigation and selection of the material means best suited to the handling of many varied rather than one specific job. Qualitative and quantitative adaptation is the characteristic which can be built into a rotary drilling outfit so that its selection can be justified by the range of jobs it can handle. Thus, the requirements of the drilling program must be the first factor to be considered.

Program

Drilling programs are shaped by the factors which influence the choice of hole and casing sizes. The choice of these is influenced in turn by such local factors as depth, formation, attitudes of strata, expected productivity, well spacing, and the number of wells to be drilled. Furthermore, there are three general types of holes which influence the economics of the selection of suitable drilling programs, core holes, "wildcat" or exploration holes, and regular development wells.

For all practical purposes, the drilling program is a major mechanical problem. Up to date, it has been the practice to obtain ever bigger outfits to handle ever deeper drilling programs. This occurred because the deeper wells were drilled in accordance with hole and casing size programs as specified for their shallower predecessors. For example, a 13-3/8" - 8-5/8" - 6-5/8" casing program for an 8,000′ development campaign was extended to a 10,000" field. The use of 5-9/16" drill pipe was extended from 6,000′ to 9,000′ of depth within the past ten years. In order to handle such progressive load increases, machinery and equipment was redesigned. Manufacturers and supply companies crowded one another to be the first on the market with bigger, heavier, and costlier outfits. For the shallower holes, nevertheless, the small outfits still were required. So we find an industry in a position of rare economic servitude, under which the cost of drilling became a function of many human desires for material diversification.

Recently, however, the "streamlined" drilling program has been advanced as a means of simplification. Its beginning was in the Mid-Continent fields as the direct result of economic pressure. This was due to the effect of legalized curtailment of production and consequent reduction of income to be obtained from the sale of oil and gas. So-called "big outfits" were available to handle the deep well drilling loads, but the pay-out period was so lengthened that expenditures for this costly equipment, as well as for the larger sizes, heavier weights, and special alloy grades of required tubular goods, could not be justified. The economics of selection was resolved into a proposition of adaptation. The outfits on hand were called upon to handle the deep well programs in order to follow up and keep pace with discoveries. Smaller holes were drilled to accommodate smaller casing strings. A new type of outfit appeared powered by multi-cylinder internal combustion engines. Spreading to California, the "slim" hole idea caught on, and it is apparent that much argument is yet to be presented prior to its more general acceptance. It is our point of view that there is an optimum drilling program which can be handled by a few types of outfits with capacities based on some sort of standardized range of application. Naturally, such an idea must be adopted by agreement. If it is the human desire of management to obtain such material satisfaction, with respect to the selection of rotary drilling equipment, the manufacturers and suppliers will be pleased to cooperate. The scope of this paper is far too broad to permit too much detail and speculation. We shall attempt to point our merely the essentials of a discussion which we feel can be concluded only after considerable investigation.

Basically, we suggest that the approach to the study of the industry's drilling equipment needs should follow the same general path as that which led to such good results in connection with the simplification of casing lists. We can set up the types of equipment now available to the industry by sizes and capacities. The elimination of super-

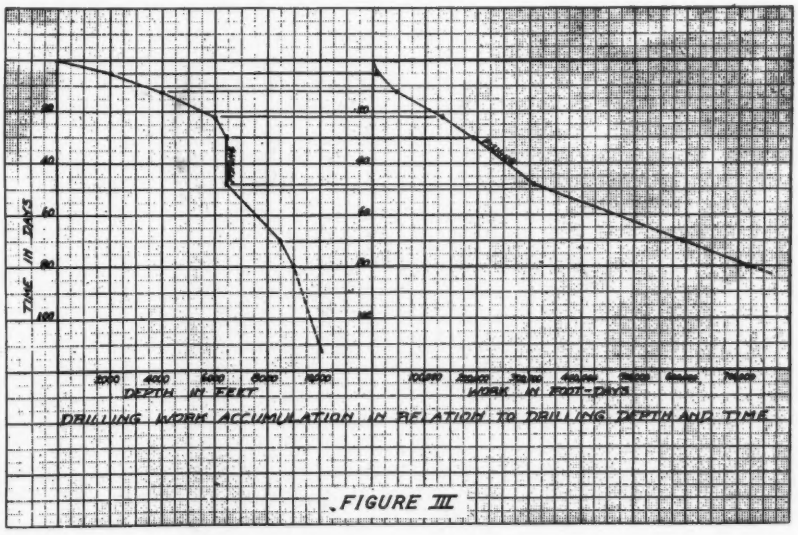

FIGURE III

fluous groups can be based upon the adoption of range limits. Manufacturing ingenuity will not be affected in the least because the application of designs and devices then can be promoted on the most logical thesis of competition, namely, a better way to obtain a certain range of performance. The net result will be standardization on the broad basis of group selection, rather than upon the theory of mass production of similar parts and replacements. The latter conception of standardization is desirable, but obtainable only upon the conclusive delineation of the former, and is an ultimate rather than an immediate aim. The development of such an idea can be explained in relation to the three types of drilling work to be considered.

Of minor mechanical importance, because of limitations to rather shallow depths, and also because of the premise of being drilled purely for geologic information, are core holes. Relatively small, self-contained, portable outfits are utilized for this work. These are engine powered, gas, butane, or diesel, unitized and truck mounted, with mast, pump, hoist, rotary, and other accessory drilling equipment. Fuel tanks are carried with the unit, and the low rate of water consumption makes it possible to haul economically when necessary.

Exploration hole requirements differ from regular development work in one respect, that is, by degree of isolation. Further drilling in the vicinity depends upon discovery. On a one hole basis, there is no need for an elaborately planned program. "Streamlined" wildcats are now the rule rather than the exception. Thus, the selection of a rotary outfit for wildcat drilling should be based upon the economics of the power factor firstly, with the expansion of this consideration to provide adequately for all the other subordinate factors of depth, formation, and size of hole. Rotary outfits are rated on the basis of depth capacities by most all the manufacturers. If such ratings are based on more or less reliable engineering data, the choice of an outfit is obviously an easy matter. The remaining consideration is the cost of the power required to perform the work. The fact that different manufacturers do not agree on the criteria which should be used to rate an outfit with respect to its capacity to drill to a given depth is sufficient evidence that there is dire need for the establishment of standards.

Regular development work requires the drilling of given areas to comparable depths after a planned pattern of hole and casing sizes based on the average economic significance of each well completion. If fuel and water are plentiful, steam outfits can be utilized. These utilities, however, are never so plentiful to permit wastage. If gas can be saved in the productive formation, its indiscriminate use for drilling fuel cannot be excused. The examples of direct mechanical and electric rig operations in oil fields from Illinois to California, show a continuity of growing favor among drilling contractors. The fuel and water economies effected by such rigs are well known. If gas can be saved to lift more oil for more economic future production, the cost of such gas for fuel may be said to be at least doubled.

Drilling equipment for regular development work need not be catalogued separately from that which may be recommended for wildcat operations. The automobile industry provides the public with a variety of truck models and capacities; the truck purchaser attempts to select a model and capacity which will handle the greatest number of different jobs economically. The writer has seen dump trucks hauling rock, sand, rotary mud clay, grapes, oranges, and grapefruit. By the same token, a rotary drilling outfit may be built up or down as required. This can be illustrated best by sketches as shown on Figures 1 and 2, which illustrates the manner in which a deep well drilling outfit can be split for service in shallower drilling without much expense. Similarly, a small outfit can be built up to deep well drilling capacities. In this case, the purchase of heavy duty rotaries, swivels, blocks, and other accessories would be additional.

Drilling programs influence the selection of rotary equipment to the extent of the subordinate effect of a combination of peculiarly localized factors. Depth—a 12,000′ hole can be drilled with the same outfit that drilled a 9,000′ hole, provided casing and hole sizes are revised in relation to known performance capacities. Formation — the size and capacity of drilling equipment is secondary to the operating skill and knowledge of the subsurface stratigraphy of the driller. Expected productivity and well spacing — there is conclusive evidence that drilling practices rather than drilling equipment influence the indices of productivity. It is argued that heavy duty equipment facilitates the promotion of optimum drilling practices for this purpose. Time drilling appears to be the most critical factor involved. However, recent bit and drill pipe advancements have been shown as the real factors, because drilling time is governed primarily by the skill, efficiency, and control by men at the surface of subsurface equipment. The number of wells to be drilled obviously is a factor which governs the initial need for a rotary outfit. The cost can be spread on the estimate of the need.

The depreciation of drilling equipment may be spread over a series of drilling programs. Most outfits are retired and junked because they are obsolete. Depreciation charges which finally overtake a rather unpredictable obsolescence factor are the objective of the calculations of most engineers. Thus, the recommendation of drilling equipment must be based upon the surety of its capacity. The operation of such machinery under the stress and strain of overloads hastens its obsolescence because it may be rendered unfit for long-lived utility far in advance of reasonable depreciation allowances. Fair value to all concerned is the selection of equipment commensurate with an expected range of useful life which may be spread over a series of drilling programs for a period of at least four years, with enough

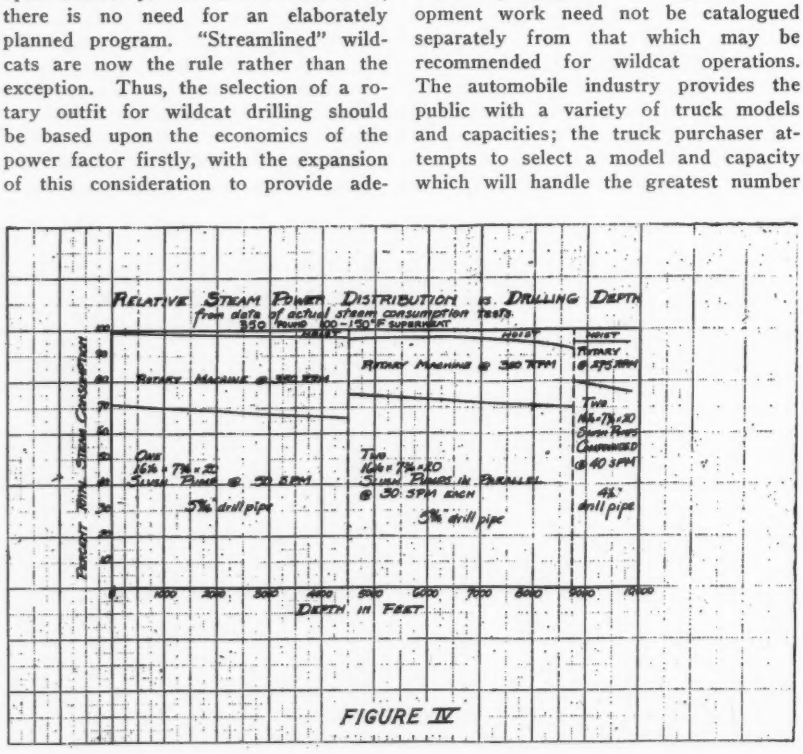
RELATIVE STEAM POWER DISTRIBUTION vs. DRILLING DEPTH
from data of actual steam consumption tests
350 POUND 100-150°F SUPERHEAT
PERCENT TOTAL STEAM CONSUMPTION
ROTARY MACHINE @ 300 R.P.M.
ROTARY MACHINE @ 300 R.P.M.
HOIST
HOIST
ROTARY @ 275 R.P.M.
TWO 16½ × 7¾ × 20 SINGLE PLATE @ 30 S.P.M.
ONE 16½ × 7¾ × 20 SINGLE PLATE @ 30 S.P.M.
TWO 16½ × 7¾ × 20 SINGLE PLATES IN PARALLEL @ 30 S.P.M. EACH
TWO 16½ × 7¾ × 20 SINGLE PLATES CHAINED @ 40 S.P.M.
5⅜" drill pipe
5⅜" drill pipe
4½" drill pipe
DEPTH IN FEET
1000
2000
3000
4000
5000
6000
7000
8000
9000
10000

FIGURE IV

overload capacity to provide a reasonable margin of mechanical safety. There are at this time, many good rotary outfits in 8,000′ to 10,000′ drilling well campaign service over eight years old. The cost of a drilling program in terms of equipment value is often less than the cost of a drilling well. That is the economic justification for the drilling of wells by contract.

POWER

Power is the second factor which influences the selection of rotary drilling outfits. Power generation and utilization share equally effective economies. Characteristically, there are a number of subordinate factors which influence the choice of power. These are in the order of importance:

1.—Source and accessability
2.—Dependability
3.—Capacity
4.—Efficiency

Necessarily, all four of these factors may be resolved into terms of cost. The economic significance of the power factor is a function of the work to be done. Thus, a wildcat project presents a set of conditions which upon abandonment automatically cease to exist. However, in the event of discovery, these conditions may be amplified and expanded considerably. The essential facts in connection with the most of power are well known. Fuel and water are the necessary utilities. Rotary drilling outfits may be adapted to the use of three types of power, steam, electric, and direct multi-cylinder internal combustion engine. Today all three are industrially acceptable. Steam generated in oil field boilers requires large quantities of dependable reserves of water and fuel, either gas or oil. These must be transported by truck or pipe lines. The cost of hauling such utilities is very often prohibitive. The cost of piping the same from reliable reserves is usually the determining practical factor. The price of the fuel at its source must also be considered. The cost of utilization or efficiency of the boiler plant, as well as individual units of drilling equipment, is significant. Boiler plant installation costs are often prohibitive due to topographic conditions. Chief advantage of steam power is the fact that its use permits the employment of rotary drilling outfits generally on hand, and, therefore, obviates the necessity of looking around for other types of equipment. Furthermore, the average rotary crew is at this time more familiar with steam power equipment.

Electricity may be obtained through power transmission lines or by means of engine operated generator plants. For the drilling of a wildcat well the former is often too costly. Engine powered generator plants, however, are becoming more and more popular, particularly in the Mid-Continent area. The load and torque features of direct current motors have been proved the equal of steam equipment, and may be utilized at the rigs with similar operating characteristics. The cost of electric power is largely a function of the quantity of energy required from the generator plant. Engines and generators represent considerable weight, and for hauling and installation require almost the same attention as an ordinary boiler plant, with one distinct exception, namely, the elimination of pipe, valves, and fittings for fuel, water, and steam, which constitute a great nuisance factor around a steam plant rig layout.

Direct engine power is the simplest of all three. The use of multi-cylinder internal combustion engines for drilling outfits is also the least advanced because it has been developed over a much shorter period of time. There is also the nuisance factor of pulleys, V-belts, chain, clutches, and gear mechanisms, which attached to the mechanical outfit constitute the main reason for much of the prejudice which handicaps its more general acceptance. Nevertheless, the use of direct mechanical outfits for both wildcat and development drilling has demonstrated beyond doubt, certain distinct economies which have lowered the cost of drilling. Criteria such as these have resulted in a sudden spurt in the demand for this type of equipment. The cost of direct engine operated outfits is influenced chiefly by the ease with which such rigs can be moved, rigged up and torn out, as well as by the elimination of much weight, fewer large bulky units, and substantially lower fuel and water consumption. As in the case of the electric outfit, pipe, valve, and fitting requirements are reduced to a minimum. The elimination of switches, fuses, blowers, grids, cables, and wiring is further advantageous. Generator losses are probably equivalent to the transmission losses of direct mechanical rigs, although the direct current outfits still hold the distinct advantage of more desirable power characteristics. The development of the hydraulic coupling, torque converter, and a hydraulic transmission, will eliminate this handicap.

Power dependability is most satisfactorily obtained within a rig site location of a self-contained plant. Thus, the generator plant and the engine layout of the direct mechanical rigs are typical of maximum power dependability, provided there are spare engines and generators for emergency service. In developed fields, the reliability of a gas and water supply is determined by the nature of the production and the ability of the field personnel to keep planning apace with the anticipated work. The capacity of fuel gas production to keep up with development drilling is often a factor. Under the terms of a curtailment agreement, it can be shown that a costly shortage of gas might result. Similarly, the adequacy of a water supply might be affected by the vagaries of water well production methods, a recession of the water table, or even a very cold night which might freeze the streams in surface lines.

Efficiency of power generation and utilization is as controversial as the calculations which might be made to prove the points of argument. For the purpose of this paper, we shall dismiss such abstruse computations and substitute a more tangible conception, namely, cost. The cost of power to operate any given rotary outfit should be the most acceptable efficiency rating. For example, we shall set up an actual case of nine wells, drilled in a developed field, in the same general area of that field, to comparable depths, with the same casing programs, by three crews using three different power plants, two steam, and one direct mechanical, and all rigs using natural gas fuel.

The "out-of-pocket" operating efficiency of these three setups may be said to be somewhat in proportion to the value of gas and water consumed, plus the cost of rigging up, tearing out, and moving. This is the kind of efficiency rating which interests management and stockholders. Naturally, any serious differences in drilling time might influence other drilling costs to the extent that the cost of power might be less important. However, as indicated in the foregoing actual case, such differences in drilling time may be the result of crew and supervision moreso than machinery and equipment factors. For all practical purposes, the direct mechanical rig operated satisfactorily on about eleven percent (11%) gas and thirty percent (30%) water consumption when compared with the two steam operated rigs in the same territory.

Individual units of drilling equipment have characteristic power ratings in terms of consumption. Well known to oil men is the fact that two similar operations can be handled by two different pieces of equipment of the same rated capacity, but with widely divergent power consumption features. In order to ascertain the nature of such variations in oil field drilling equipment, one company conducted a lengthy series of tests during the drilling of one of its deeper regular development wells. The purpose of these facts was to obtain only

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PETRECO

DE-SALTING DEHYDRATING

CREW 1			
250-LB. STEAM PLANT			
WELL NUMBER	1	4	7
TOTAL DEPTH	9,225′	9,150′	8,980′
TOTAL DAYS	70	56	56
MCF GAS CONSUMED	39,076	36,306	38,508
BBLS WATER CONSUMED	108,129	93,959	98,693
CREW II			
350-LB. STEAM PLANT			
WELL NUMBER	2	5	8
TOTAL DEPTH	9,350′	8,980′	9,050′
TOTAL DAYS	76	57	62
MCF GAS CONSUMED	48,882	48,962	47,083
BBLS WATER CONSUMED	136,973	114,550	118,541
CREW III			
3-350 H. P. ENGINES			
WELL NUMBER	3	6	9
TOTAL DEPTH	9,025′	9,100′	9,190′
TOTAL DAYS	70	50	67
MCF GAS CONSUMED	5,426	3,913	6,095
BBLS WATER CONSUMED	31,747	35,815	36,243

the basic steam consumption data for the benefit of future engineering reference and application. Comparative equipment tests and trials were not attempted. Substantially valueable information was disclosed as outlined briefly hereinafter.

Boiler Plant

5—350-lb. Superheat Steam Generators with forced draft to stacks—integral type superheaters furnished degree of superheat as function of load up to about 150° F. at 50,000-lb. steam per hour.

Drilling Equipment

14x14 Twin Cylinder Hoist Engine
10x9 Vertical Rotary Drive Engine
12x12 Twin Cylinder Standby Engine
Heavy Duty 4-Speed Draw-works
3-Shaft 30-5/8″x41″ Drum, 10″ Drum Shaft
2—16¼x7¾ x20 Slush Pumps
27½″ Oilbath Rotary Machine
Balance of accessory equipment all heavy duty, with hoisting apparatus using 1¼″ wire line.

Hole Drilled

18″ to 1,435′ (Cemented 13⅜″ Casing)
12½″ to 8,420′
11″ to 9,430′ (Cemented 7″ Casing)
6″ to 9,790′

Duration of Steam Tests—61 days.

Average Steam Consumption—487,500 lbs. per day.

Average Gas Fuel Consumption—808 MCF per day.

Peak Steam Consumption

570,000-lbs. per day from 7,000′ to 8,000′ with 5-9/16″ drill pipe, and 420,000 lbs. per day from 8,800′ to 9,400′ with 4½″ drill pipe.

Minimum Steam Consumption

250,000-lbs. per day at 500′ with 5-9/16″ drill pipe, and 240,000-lbs. per day at 9,700′ with 3½″ drill pipe.

Minimum Gas Consumption at boilers also followed above trends.

Slush Pump Steam Consumption

Maximum—60-lbs. per fluid H. P. hour at 50 strokes per minute. Practical Minimum—38-lbs. per fluid H. P. hour at 25 strokes per minute. Observed Optimum—40-lbs. per fluid H. P. hour at 30 strokes per minute. It was demonstrated that one pump operating at 50 strokes per minute required about two percent (2%) more steam than two pumps operating in parallel at 30 strokes per minute each.

Rotary Drive Steam Consumption

Maximum—18,000-lbs. per hour at 380 RPM. Practical Minimum — 3,600-lbs. per hour at 130 RPM. Observed Optimum—7,800-lbs. per hour at 260 RPM.

Hoisting Engine Characteristics

From series of typical hoisting curves:

Low-low—830 to 840 net hook H. P. for handling 176,000 to 200,000 lb. net hook load. High-low—710 to 780 net hook H. P. for handling 108,000 to 156,000-lb. net hook load. Low-high—620 to 720 net hook H. P. for handling 66,000 to 108,000-lb. net hook load. High—425 to 540 net hook H. P. for handling up to 66,000-lb. net hook load.

It is noteworthy that the power required for hoisting was tertiary to that which was required for circulating and drilling work. (See Figure 4) Inferentially, the greatest power economies can be realized by slush pump and rotary machine operating improvements. The foregoing data is a clue to the answer of a common question—how much power is required to operate a given set of drilling equipment in actual service?

The cost of power utilization naturally determines the trend of the cost of power generation. Net effective utilization costs are the final measure of plant requirement and generating costs. It is the writer's conviction that there exists in the files of many companies a wealth of drilling equipment operating data, which, if gathered together and correlated, would provide a substantial nucleus around which we could build a system of engineering values for the selection of drilling equipment on the basis of operating characteristics. An accumulation of facts like this would obviate forever the necessity for so-called expert conjecture and highly opinionated recommendations. Power factors can be evaluated with remarkable accuracy, and it is only the lack of convincing and overwhelming local and regional statistics which handicaps the full use of their economic application and possibilities.

COST

Thirdly, and all-inclusive, among the principal factors which influence the selection of drilling equipment is overall cost. The economics of selection is most finally explained by the formulae for cost determinations. These formulae are influenced profoundly by individual company constants. Such constants are sometimes the reflection of corporation bookkeeping practices. More often they are interpretive rather than factual. Obviously, engineers must resort to more arbitrary methods of cost analysis. Fundamentally, these engineering methods are empirical and depend largely upon the keeping of good performance records. Records which tell the story of the performance of drilling equipment are only as valuable as they are complete. Partial data automatically opens the way for colored information and biased opinions. Objectively, the conclusion of any cost analysis should be able to stand on its own merits. We propose, therefore, a standard group of cost items which we believe to be adequate as indicators of the cost of drilling. Such a cost aggregation naturally cleaves into three general classifications:

I. Tool rental charges
II. Drilling expense
III. Well investment

Drilling machinery and equipment belongs in the first category. It cannot be charged as expense to any one job under ordinary and accepted procedures. The cost of drilling equipment is spread out over a number of years of useful life, and is prorated back to the properties and wells in some proportion to the relative amounts of service rendered. It is the nature and composition of such tool rental charges which could be standardized on the basis of industry experience, as well as upon individual company data. Firstly, a complete list of acceptable tool rental items must be agreed upon. We suggest the following:

1.—Drilling derrick and derrick accessories.

Here's the story straight from Mr. George Langenfelder of C. J. Langenfelder and Son, prominent Baltimore Contractors:

"Prior to the use of RPM DELO we overhauled all our Diesel engines after 2500 to 3000 hours of service ... Since using your RPM DELO our engine life expectancy is over 6000 hours! To us this means *100% longer engine life and reduction by one-half of our engine overhauls.* By experience, by cold facts, we attribute our results to RPM DELO.

"We recently completed a job on the Pennsylvania Turnpike involving the moving of nearly 2,000,000 yards of rock, shale and dirt. Our contract called for completion in 270 calendar days; if we ran over, heavy penalties were imposed. Our insurance against time loss was 100% use of RPM DELO, so we finished ahead of schedule.

"We own and operate 28 Caterpillar Diesels... 3 Waukesha-Hesselman engines... 4 Mack-Lanova Diesels... 9 Cummins Diesels... 44 units, which to us represent 44 reasons why we use RPM DELO exclusively!"

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STANDARD DIESEL FUEL

No matter how long or hard you work your engine, Standard Diesel Fuel delivers smooth, uniform FULL POWER hour after hour. And it's the safest power you can buy. Completely distilled—100% clean—Standard Diesel Fuel protects fuel pumps and injectors perfectly. It's the buy for your Diesels!

RPM DELO

REG. TRADE-MARK

DIESEL ENGINE LUBRICATING OIL

STANDARD OIL COMPANY OF CALIFORNIA

2.—Boilers and unitized boiler plant equipment.
3.—Electric generators and motors.
4.—Engines.
5.—Pumps.
6.—Draw-works and brakes.
7.—Rotaries, swivels, blocks and crowns.
8.—Standby units.
9.—Blow-out preventers and control equipment.
10.—Drill pipe, drill collars, stems, subs, elevators, tongs, slips, weight indicators, and fishing tools.

All other items used in connection with drilling well operations can be considered as either Expense or Investment, of which categories neither are the concern of this paper except insofar as they may be affected by their Tool Rental relationships. Secondly, there should be an agreed range of capacities for not more than three sizes of rotary outfits, based, for example, on a dual load rating, shaft and drive capacities for hoist work, and drive and transmission capacities for drilling work.

1.—For drilling to 5,000′.
2.—For drilling to 10,000′.
3.—For drilling to 16,000′ and deeper.

Thirdly, the establishment of a standard measure of performance to be used as the basis of charges would promote more useful uniformity of procedure. The performance unit in terms of individual well work could be a compound expression of both depth and time. Drilling work thus can be illustrated and very closely approximated by the foot-day. A uniform procedure could be based upon a study of California drilling records for California use factors, which in turn would be complemented by agreed standards of economic useful life. Obviously it is agreed that different pieces of drilling equipment vary considerably in terms of useful life. The necessity for the application of a weighted average system of control is apparent. The foot-day unit is well suited for such an adaptation. (See Figure 3)

An example to illustrate the manner in which the foot-day drilling work system may be utilized to spread and equitably account for tool rental charges is outlined below:

Total Cost of New Drilling Equipment (One Rig).....$150,000.00
Less Estimated Salvage Value at 10%..... 15,000.00
Net Depreciable Cost..... 135,000.00
Plus 35% for Repairs and Maintenance 47,250.00
Total Cost of Tool Rental Items 182,250.00
Estimated Economic Useful Life:
Number of wells drilled.....15
Average depth of wells drilled 9,000′
Average days drilling per well.....55
Number of foot-days.....7,425,000
Tool Rental Charge per Foot-Day $0.025

For comparative analysis, the Tool Rental Rate per Drilling Day would amount to $220.00, and per foot of Drilled Hole to $1.35, on the basis of the same useful life estimate. The estimate of useful life is the figure which could be obtained from a conclusive resume of 9,000′ California drilling experience data. It should be a weighted average of the economic useful life expectancy of the major drilling equipment items, as listed hereinbefore. The accumulation of such records should be no more difficult than the gathering of production statistics, and should be equally advantageous to all concerned because

1.—They would serve as a basis for more comprehensive depreciation studies, and
2.—Would provide the data to substantiate a more systematic repair and replacement policy.

There are many drilling operations during the course of which no new hole is drilled. Because the drilling equipment is utilized whether or not hole is made, and because the foot-day unit is weighted for both depth and time, it is possible to spread most equitably such charges as tool rental, which, in themselves, are useful only insofar as they may reflect, as closely as possible, actual drilling experience. A typical drilling job will illustrate the point. In this case, trouble was encountered at 6,420′. and for eighteen days, no new hole was made.

Noteworthy are the following disclosures:

(1) Tool Rental Charges on a foot-day basis accumulate so that the lowermost portion of the hole is weighted most heavily. Drilling experience proves that this feature more truly approximates the actual progression of drilling costs than the usual straight line methods. Because drilling experience is a progression of actual work quantities as reflected by rotating, hoisting, and pumping operations, and because the accumulation of such work is possible only in terms of foot-pounds, or other such characteristically defined work units, the foot-day unit is peculiarly analogous. Drilling costs increase in proportion to the drilling work done, and in order to obtain the most characteristic increments of progression, both depth and time factors must be combined.

(2) During the eighteen day "no hole" period, there is an appropriate tool rental charge which reflects nominal machinery and equipment operations, whereas on a footage basis, no charge is shown, while on a day basis, the charge is excessive for the type of operations involved.

(3) The Foot-day method is applicable to any depth of hole drilled within the total depth capacity of the largest heaviest duty outfit. One rate is, therefore, adequate for all types of equipment on a weighted average basis. Correspondingly higher and lower tool rental charges automatically result from the greater and lesser rates as they occur in the progression, which in turn are peculiarly fitted to the expressions of drilling costs as determined by the size, cost, and capacity, of correspondingly heavy and light duty outfits.

A natural inquiry is concerned with the proposition of how the choice of drilling equipment may be affected by the cost as expressed by accumulations of tool rental. In this connection, cost is not necessarily represented by money or wealth. Henry Ford contends that "wealth is the use value of things"—and it is this contention that we believe to be applicable to the choice of drilling equipment. As mentioned hereinbefore, ultimate cost is the foundation of tool rental, and the selection of drilling equipment should be affected most subjectively by the total rather than the partial cost. Therefore, the cost of a $150,000 rotary outfit actually approaches $200,000, and the operator who contemplates its purchase must not overlook its total evaluation in terms of the work to be done. The work to be done can be estimated most satisfactorily in terms of work units. An analysis of future tool rental calculations then will show the expected future economic status of the purchase.

Acceptance by the industry of certain standards of drilling equipment performance rating could provide the superstructure upon which could be built an

ACCUMULATED TOOL RENTAL

	FACTORS		CHARGES		
Depth	Time	Foot-Days	At $1.35 Per Foot	At $220.00 Per Day	At $0.025 Per Foot-Day
2,000′	5	10,000	$ 2,700.00	$ 1,100.00	$ 250.00
4,000′	12	48,000	5,400.00	2,640.00	1,200.00
6,000′	22	132,000	8,100.00	4,840.00	3,300.00
6,420′	30	192,600	8,667.00	6,600.00	4,815.00
6,420′	48	308,160	8,667.00	10,560.00	7,704.00
8,500′	70	595,000	11,475.00	15,400.00	14,875.00
9,000′	80	720,000	12,150.00	17,600.00	18,000.00

acknowledged schedule of drilling equipment values. From this, both small and larger operators would be able to determine their course with the same technical yardstick of combined experience. One of the critical weaknesses of such a scheme is the competitive nature of the business. However professional as well as industrial competition recognize the fundamental value of accumulated experience. Industry welcomes standardization of policies in order to obtain the benefits of more systematic self-regulation. Actually then, in the final analysis, the cost of drilling equipment may be said to be based upon the factors which influenced its choice.

Conclusions

Efforts to "streamline" the choice of drilling equipment most effectively can obtain both mechanical and economic significance by the pooling of drilling performance information. Regional as well as local drilling factors could be set up for general industry use, so that the consideration of drilling equipment would be on a basis similar in scope to the design of casing strings and the application of areal production formulae. Variations in drilling programs, as well as differences in power plant and equipment power consumption economies, could be catalogued on the basis of oil industry experience to the extent that the choice of drilling equipment would be facilitated by an inspection of well correlated reliable facts and figures. Because the cost of drilling equipment is the ultimate measure of its utility value, the most direct approach to the proposition of selection is along some line of comparable standards of value. A measure of useful life in terms analogous to the work performed has been suggested. Until the industry accepts some such standards as indicative factors of use and performance, there will not be a sufficiently common reference base for any practical consideration of useful selection.

At this time, we can point out four general conclusions as noteworthy memoranda pertinent to the choice of drilling equipment:

1.—There need be no specific distinction between development and wildcat drilling outfits.

2.—The use of combination dual-power rotary rigs may be anticipated for the most convenient handling of widely variant drilling jobs.

3.—Cost data resolved on the basis of indicated work accumulation can be used to estimate the probable future worth of drilling equipment purchases.

4.—The purchase of drilling equipment can be justified economically only over a considerable period of active use. Drilling department organizations of so-called "integrated companies" might secure such an economy by following the pattern of contract drilling work. The design for profitable drilling is fundamental for contractors. It should be equally attractive to other operators.

The writer wishes to acknowledge with thanks, the work of Messrs. C. C. Baptie and John Kehoe of Richfield Oil Corporation. Mr. Baptie's report of Steam Flow Data records, from which some salient points have been used in our discussion of power characteristics, and Mr. Kehoe's preparation of the equipment layout charts contained herein, add considerably to the detail value of the paper.

Wilshire Annex Plans Jacalitos Hills Try

Having just completed a leasing program in the southeast portion of township 21 south, range 15 east, Wilshire Annex Oil Co. announces plans to drill a test well in the Jacalitos Dome area in 30 to 60 days.

Meeting for the first time in California, the board of directors of Barnsdall Oil Co. heard President E. B. Reeser express pleasure over the support given by most of the oil companies in the state to the move to add California to the list of states included in the Interstate Oil Compact. Later, the directors were guests of R. A. Broomfield, Sr., president of Barnsdall of California, and W. C. Whaley, on a tour of California oil fields. Left to right, standing, are: W. C. Whaley, vice president; J. I. Furlong, and D. L. Frawley, vice president. Left to right, seated: J. A. Dunn, vice president; I. N. Law, D. R. Snow, vice president; R. A. Broomfield, Sr., executive vice president; W. C. Loucks, chairman of the board; E. B. Reeser, president.

THIS LAUGH

OFF!!

The discussion turned to adventures in gastronomy and **R. H. Pence** was reminded of the story of the diner who had done himself extremely well and called for the manager of the restaurant.

"Do you know," he asked genially, "that I dined here five years ago, and you had me thrown out because I couldn't pay?"

"Indeed, sir?" laughed the manager, "Well, well, please accept my apologies."

"Don't mention it," laughed the diner, "Do it again."

Have you heard **Hal Davis'** touching story about the boy who was on trial for the slaying of his parents and pleaded for leniency on the grounds that he was just a poor orphan?

Then there was the maid, **"Dusty" D'Evlyn** recalls, who was called down for having the electric heater on all day and answered: "Don't worry about that, ma'am, I borrowed it from the people next door."

Cameron Wright tells the story of the Scot who kept his eyes fixed on his coat as he ate his meal in the restaurant.

His friend sought to ease his apparent uneasiness: "What are you watching so carefully, Sandy?"

"Ah'm watching ma coat."

"But you needn't do that, Sandy. I'm not watching mine."

"Ye dinna have to. It went half an hour back."

"What happened after you were thrown out of the side exit?"

"I told the waiter I belonged to a very important family."

"Then what happened."

"He apologized, asked me in again, and tossed me out the front door."

No horse can go as fast as the money you bet on him, says **M. J. Gentry.** And that reminds us of a story recounted by **D. R. Langstaff.**

A minister was asked by one of his members to say prayers on Sunday for Judge Lauders. The clergyman did so. A few days later the minister asked the church member if he desired a repetition of the prayers for the judge. "No, thank you," replied the church member, "Judge Lauders paid forty dollars across the board."

"This is the information window; can't you read?" snarled the ill humored clerk to the young lady who came to his wicket to buy a postage stamp.

The lady proceeded to the proper place, purchased her stamp, and returned. "You say this is the information window?"

"Yeah."

"Well, if I mail this letter tonight, will it be in New York day after tomorrow?"

"Sure."

"That's funny. It's addressed to Chicago."

Cop: "What's the idea of all the speed?"

George: "My brakes won't work and I want to get home before I have an accident."

The subject was the piscatorial art, and **Luis Kemnitzer** was reminded of this one:

Angler: "You've been watching me for three hours. Don't you want to do some fishing yourself?"

Kibitzer: "Naw, I wouldn't have the patience."

Pusher: "What was all that noise over at your house last night?"

Driller: "Oh, that was the collector collecting one of those fifty easy payments."

"Steve" Dunlap is credited with this one.

Doctor: "Madam, I'm sorry, but I can't cure your husband of talking in his sleep."

Patient's Wife: "Well, then, couldn't you give him something to make him talk more distinctly?"

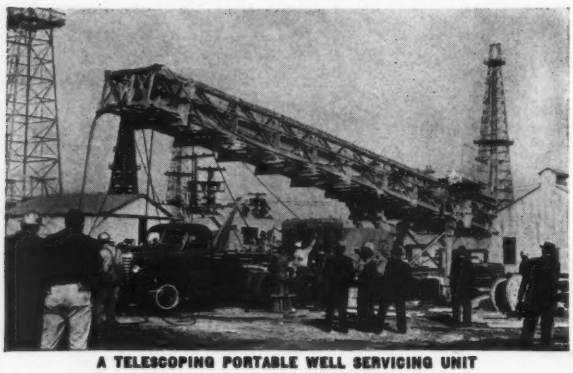
It was after Bay View upset the Santa Anita applecart, and one saddened roustie greeted another thus:

"Didn't you have any luck at the races today?"

"Luck? When Challedon passed me, I leaned over the rail and yelled, 'They went up that way.'"

Names used on this page are entirely fictitious, and any resemblance to persons either living or dead is purely coincidental.

WEIGHT INDICATOR POINTS
Accuracy . . . Sensitivity . . . Readability . . . Dependability. Do your slush pump gauges combine all these requirements? The Martin-Decker Individual and Unitized oil-filled Slush Pump Gauges do!
You get accuracy throughout the range—sensitivity adjustable to your desire. The position of the pointer is readable 40 or 50 feet away—you can know the pressure even though you can't distinguish individual figures on the dial. And dependable performance is guaranteed by the pioneer oil field instrument manufacturer—Martin-Decker!
MARTIN-DECKER CORP., LONG BEACH, CALIF.



A TELESCOPING PORTABLE WELL SERVICING UNIT

This New Development has the Most Dependable POWER

Versatile performance—with dependability—and a wide range of utility. This new development, a 90-ft. Telescoping Portable Well Servicing Unit, has it. To make doubly sure, its designers began with the power plant. ***It's a Waukesha!***

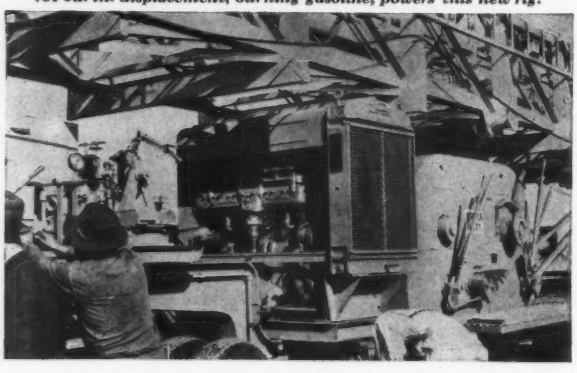
Knowing the oil fields and oil men . . . and what they both must have . . . a Waukesha Engine was the first and logical choice of International Derrick & Equipment Co., and the Hopper Machine Works who build the hoist.

And to insure the utmost in dependable performance for your own oil field equipment, Waukesha Power is ***your*** **most logical choice.** ***Waukesha Oil Field Engine Bulletin No. 1019 sent free on request.***

WAUKESHA ENGINES

WAUKESHA MOTOR COMPANY, WAUKESHA, WIS.
NEW YORK TULSA LOS ANGELES

A Model GAKU Waukesha Power Unit with 5½ x 5½ in. bore and stroke, 784 cu. in. displacement, burning gasoline, powers this new rig.



Production « « « «

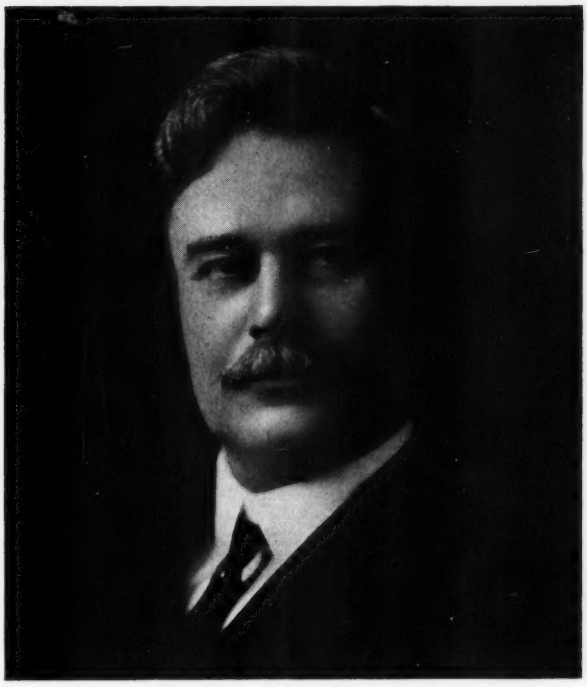
(Figures of Production and Stocks are in barrels of 42 Gals.)

	Total Production January	—DAILY AVERAGE— Jan., 1941	Dec., 1940	Jan., 1940
Group No. 1				
Arvin	31,588	1,019	1,053	2,561
Belridge—North	322,945	10,418	9,749	11,287
Belridge—South	66,965	2,160	2,146	1,831
Canal	160,481	5,177	5,187	5,840
Canfield Ranch	1,384	45	43	60
Coalinga	1,043,763	33,670	33,114	21,807
Cole's Levee	156,602	5,052	4,756	2,368
Edison	82,679	2,667	2,808	2,205
Elk Hills	372,354	12,012	12,058	10,544
Fruitvale	163,032	5,259	5,322	6,050
Greeley	163,398	5,271	4,977	3,245
Kern River	309,455	9,982	10,345	11,650
Kettleman North Dome	1,217,592	39,277	38,923	48,239
Lost Hills	102,178	3,296	3,468	4,167
McKittrick	108,762	3,509	3,582	3,498
Midway-Sunset	1,480,970	47,774	47,813	52,306
Mountain View	174,738	5,637	5,948	7,466
Mount Poso	277,716	8,957	8,787	9,743
Paloma	12,278	396	411	181
Rio Bravo	342,152	11,037	10,588	7,741
Round Mountain	233,717	7,539	7,573	7,739
Strand	43,130	1,391	1,379	1,311
Ten Section	368,715	11,894	11,260	8,480
Tupman	223,933	7,224	6,573	972
Union Avenue	250	8	.....	.....
Wasco	49,354	1,592	1,653	1,115
Wheeler Ridge	8,940	288	301	315
Group No. 2				
Capitan	54,021	1,743	1,717	2,021
Elwood	98,679	3,183	3,174	3,918
Rincon	148,967	4,805	4,803	4,123
San Miguelito	114,832	3,704	3,388	2,927
Santa Barbara	7,288	235	185	263
Santa Maria	179,421	5,788	8,062	3,413
Santa Maria Valley	627,248	20,233	16,731	10,763
Summerland	420	14	16	29
Ventura Avenue	1,046,545	33,760	33,620	37,034
Ventura-Newhall	335,913	10,836	9,367	7,100
Watsonville	775	25	25	25
Group No. 3				
Brea-Olinda	172,656	5,570	5,514	5,614
Coyote—East	115,692	3,732	3,883	3,041
Coyote—West	269,071	8,680	8,877	7,030
Domingues	624,679	20,151	20,209	19,627
El Segundo	49,468	1,596	1,598	2,699
Huntington Beach	825,506	26,629	26,074	27,414
Inglewood	345,482	11,145	11,134	12,945
Lawndale	1,065	34	33	43
Long Beach	1,295,140	41,779	41,774	46,056
Los Angeles-Salt Lake	16,503	532	517	542
Montebello	476,486	15,371	15,984	26,779
Playa Del Rey	120,521	3,888	3,567	4,377
Potrero	67,946	2,192	2,134	1,587
Richfield	229,232	7,395	7,531	8,765
Rosecrans	366,189	11,812	12,404	9,477
Santa Fe Springs	752,881	24,286	25,027	25,927
Seal Beach	202,528	6,533	6,639	7,258
Torrance	285,026	9,194	9,457	13,294
Whittier	6,463	208	214	970
Wilmington	2,525,701	81,474	80,844	83,844
Total	18,881,415	609,078	604,319	611,626
December	18,733,895	604,319		
Increase	147,520	4,759		

SUMMARY OF CALIFORNIA OILFIELD OPERATIONS FOR JANUARY, 1941—STOCKS HELD IN PACIFIC COAST TERRITORY BY CALIFORNIA OIL COMPANIES

	Jan. 31, 1941	Dec. 31, 1940	January Changes	Jan. 31, 1940
1. Gasoline-Bearing Crude	35,822,914	35,914,258	— 91,344	35,457,793
2. Non-Gasoline-Bearing Crude	11,860,777	11,872,989	— 12,212	13,378,972
3. Unblended Nat. Gas	2,428,059	2,485,779	— 57,720	1,662,478
4. Gasoline (not including distributing and service stations)	15,343,155	14,864,355	+ 478,800	16,918,562
5. Naphtha Distillates	1,944,979[1]	1,889,913[1]	+ 55,066	1,289,515[1]
6. Gas Oil and Diesel Oil	9,838,925	10,160,780	— 321,855	9,099,950
7. Fuel Oil Residuum	58,825,656	59,920,167	—1,094,511	65,990,389
8. All Other Stocks	8,216,267[2]	8,458,283[2]	— 242,016	7,766,883[2]
	144,280,732	145,566,524	—1,285,792	151,564,542
[1]Estimated amount of unfinished gasoline contained in item 5	1,760,130	1,711,171		1,036,948
[2]Coke included in item 8	525,519	914,273		1,018,659

Pioneer Oil Man Dies



Captain John Barneson

John Barneson, sea captain who became one of the dominant figures in the petroleum industry in California, died Feb. 26, at his home in Hillsborough, Calif.

It was Captain Barneson, commander of clipper ships in the Government service, who had the keen insight to perceive what was then stubbornly resisted by the major steamship companies and laughed to scorn by the naval experts of the world. That is, the now self-evident fact that oil is the logical fuel for marine transportation. To demonstrate the correctness of his views, he tried in vain to induce the army authorities to convert one of the transports to oil, and finally persuaded Captain Matson to try oil on the S. S. Enterprise on the run to Honolulu.

From the beginning of his interest in petroleum, Captain Barneson's uppermost thoughts centered on the utilization of oil as distinguished from its production, its introduction into modern industry. To that end only, and to secure the supply necessary for the success of his plans, did he turn to oil development. He participated in the building of the first real pipe line in California, running from Coalinga to Monterey, and proving that the heavy asphalt base crude oil of California could be piped. Then he projected the first pipe line southward from the Valley fields over the Tejon Pass, again accomplishing what the experts said was impossible.

In March 1910, a number of the early companies he had helped to organize in the Coalinga and Central Midway districts combined with the Esperanza Oil Co. to become the Esperanza Consolidated Oil Co. With the development of the fields in the Los Angeles Basin, Captain Barneson turned his attention to the Brea and other fields near Richfield. At the same time he organized the General Pipe Line Co. in order to transport oil from the Central Midway district to the Los Angeles Harbor, the latter being a closer shipping point for the Central Midway district than San Francisco or Monterey.

In April 1912, the Esperanza Consolidated Oil Co. changed its name to the General Petroleum Co., becoming a well rounded concern having production in the principal fields of the state, a pipe line to transport its oil, and a refinery at Vernon to convert it into marketable products. At the same time, Captain Barneson organized and became the president of the Bankline Oil Co., now one of the more important independent producing companies.

Captain Barneson remained at the head of General Petroleum Corp. (so named after reorganization in 1916) until his retirement in 1928. Two years previously he became a vice president of Standard Oil Co. of New York.

Four children survive: J. Leslie and Harold J., of Los Angeles; Lionel T., of Hillsborough, and Muriel E. Barneson, of San Francisco.

Chain Belt Elects J. C. Merwin President

At the annual meeting of the board of directors of Chain Belt Co., J. C. Merwin, vice-president and treasurer, was elected president of the company to succeed C. R. Messinger who died Feb. 4. G. M. Dyke, assistant treasurer, was elected treasurer and A. F. Kessler, also an assistant treasurer, was elected to the new office of comptroller. Walter Kasten, president of the First Wisconsin National Bank of Milwaukee, was made a director at the annual stockholders' meeting which preceded the directors' meeting.

Mr. Merwin joined the Chain Belt organization in 1917 and has been successively superintendent, works manager,

assistant to president, director, vice-president and treasurer. He is a graduate of Sheffield Scientific School of Yale University, class of 1910, and began his business career as an apprentice tool maker at the Geometric Tool Co. of New Haven, Conn. Later, he was assistant superintendent of the National Blank Book Co. of Holyoke, Mass.

Both Mr. Dyke and Mr. Kessler have been connected with Chain Belt Co. since 1923. When Chain Belt acquired the Stearns Conveyor Co. of Cleveland, Ohio, in 1926, Mr. Dyke was elected vice-president of this subsidiary but returned to Milwaukee in 1933 when the operations of the Stearns Conveyor plant were moved there. Since that time he has been assistant treasurer. Mr. Kessler was chief accountant prior to becoming assistant treasurer in 1938.

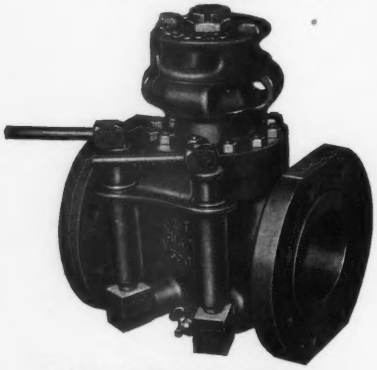
SWEEPS THE FIELDS BY 8 STRAIGHT WINS

The outcome of a race can be influenced by the breeding or condition of the horses, the riders' skill, the weather — or just luck. With plug valves it's different. They're either made for a particular service, or they can't give you the performance you should get for your money.

For instance: An installation of HAMER 6000-pound test drilling rig Plug Valves has been used in drilling eight 11,000-foot wells at Rio Bravo, one after another. These same HAMER Plug Valves are now being installed on the *ninth* well — they are in fine condition — need no repair or replacement — and they'll be in shape for the tenth well also.

HAMER drilling rig Plug Valves have been used, developed, improved, and PROVED for more than 20 years — they give you more than your money's worth — and you can't stick a HAMER Plug Valve.

SEND FOR "FORM SHEET" ON THE LEADING DRILLING RIG PLUG VALVE



One of many models of HAMER *Drilling Rig Plug Valves*

ANOTHER PROMISING 2-YEAR-OLD FROM THE HAMER STABLES

The HAMER Double Grease Seal Plug Valve above was especially developed for use on lines carrying highly volatile, hard-to-hold liquids such as butane, for high pressure gas service, and on christmas trees. Individual grease seal around each port is instantly renewed each time after operating valve; effectiveness of shut-off disclosed by tell-tale bleeder.

KEEP AN EYE ON THESE HAMER "BEST BETS"

The HAMER line includes quick-acting Line Blinds for all conditions of service and temperature; christmas tree Flow Bean-Plug Valves; E-Z Out Slush Pump Valve Seats and Economy Valves; E-Z Off Slush-Pump Pistons; and Plug Valves, both geared and without gearing, for all oil industry applications.

Send for the **1941 HAMER CATALOG**

HAMER Plug Valves

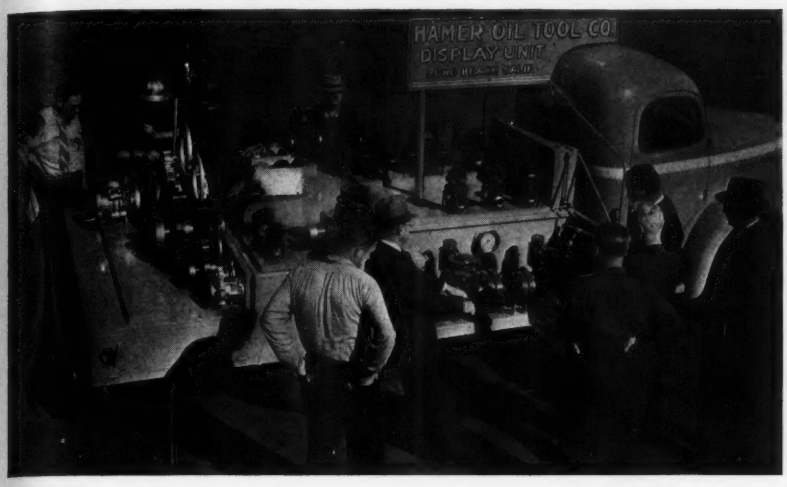
Exclusive California Distributor

REPUBLIC SUPPLY COMPANY
of California

Hamer Oil Tool Company, 2919 Gardenia Ave., Long Beach, Calif.

Watch FOR THE **HAMER** DISPLAY TRUCK IN YOUR AREA Soon!

Hamer Oil Tool Co. Display Truck



Driving the Testing Rack to the customer wherever he may be is the novel idea behind the new Display Truck just completed and put on the road, by L. S. Hamer, president of the Hamer Oil Tool Co., Long Beach, Calif. The Display Truck will first make a complete tour of all California drilling and producing areas, covering the field headquarters for drilling and production, and visiting the drilling wells. Refineries, chemical plants, and natural gasoline plants will also be stopping places on the tour.

Every item in the Hamer line is included in the display. The special platform body has two inset compartments toward the front, one on either side, which accommodate pressure pumps, gauges and piping. On one side are mounted two 6,000-pound test flanged and geared full-round-opening plug valves, piped so that pressure can be built up in either or both of them to demonstrate the ease of operation of the plug valves under pressure. Pressure can be diverted so that it is all exerted against one side of the closed plug. A visible gauge glass shows when the plug is opened against the pressure.

In the compartment on the opposite side various types of Hamer line blinds are mounted and hooked up to the pressure pump. Operation of the line blinds is demonstrated to prove the Hamer slogan. "A Positive Shut-Off Made By One Man In Less Than 1 Minute." With the open end of the spectacle in place, pressure is worked up to or beyond the test pressure of the unit. Pressure is then released, the operating gear is turned to permit the spectacle to be reversed to blind the line, then closed to the sealing position, and pressure is again exerted. This represents the complete cycle of blinding a line.

(Continued on Page 30)

GET THIS NEW HAMER CATALOG

New products that will save you money and make your job easier — new improvements that make standard Hamer equipment the leaders in their class for modern deep well drilling — are described and illustrated in this new HAMER Catalog. Here is a partial list of the contents:

★ NEW Butane Plug Valve. (Proved by two years of wide field use).

★ NEW Sizes and types of Line Blinds. (Hamer offers the most complete selection of line blinds available).

★ NEW high-Pressure Plug Valves for Drilling Rig, Christmas Trees, Refinery, and Process Plant service.

★ NEW E-Z Out Slush Pump Valve Seats and Economy Valves. (End seat pulling troubles—proved by service in the world's biggest slush pumps).

★ NEW E-Z Off Slush Pump Pistons with **double** seal-lips and metal-to-metal drag eliminated.

Get your copy of the 1941 HAMER Catalog at any REPUBLIC SUPPLY COMPANY store or write HAMER OIL TOOL COMPANY, 2919 Gardenia Avenue, Long Beach, California.

Exclusive California Distributors of HAMER PRODUCTS . . .

REPUBLIC SUPPLY COMPANY

of California

STOCKS AND SERVICE FACILITIES IN 15 FIELD STORES

Field Development

Los Angeles Basin

Inglewood Deep Zone Proved Highly Prolific

The first major discovery of the year 1941 was written into the record March 5th when R. R. Bush Oil Co. brought in the Federal Oil Co. Smith No. 1 at the northwest end of the Inglewood field flowing 2000 bbls. of 32 gravity oil and 2,500,000 cu. ft. of gas per day through a 57/64 in. bean. Although a small non-commercial well had been finished last year by the Bush company on the west flank of the field, the real importance of the deep zone remained a question until Smith No. 1 proved the existence of big production.

The finding the new horizon, deep in the Miocene, was no easy task and, so far, has required the drilling of three wells. Though the first to spud, many difficulties beset the discovery well while R. R. Bush Oil Co.'s Sentous No. 1 and Standard Oil Co.'s Los Angeles Investment No. 3-1 each reached the horizon, the former obtaining about 75 bbls. a day and the latter finding the zone too poor to attempt a completion.

Drilling was started by Federal Oil Co. on the 25th of April, 1940 and was continued to 6700 ft. where the well was suspended for two months. After the completion of Sentous No. 1 it became apparent that the northerly well was higher structurally and drilling was resumed and carried to 7883 ft. where a second suspension was forced when a core barrel "froze" on bottom. Because of the good oil and gas showings at this point, the Bush interests made an agreement with Federal to complete the test on a division of acreage basis and after several attempts, sidestracked the fish. Only 40 feet below the old bottom, the top of the deep zone was encountered, carrying so much gas pressure that drilling from 7920 ft. to final depth of 8341 ft. was accomplished only with the greatest of difficulty.

With 7 in. casing cemented at 7920 ft. and a perforated liner landed on bottom, the well was finished as the most important discovery well in the Los Angeles Basin in several years.

The production figures for Smith No. 1 read like those of the deep San Joaquin Valley fields or Ventura Avenue. While flowing at the initial rate of 2000 bbls. of oil and 2,500,000 cu. ft. of gas through a 57/64 in. bean, the tubing pressure was 1100 lbs. and the casing pressure was 2050 lbs. The cut cleaned up rapidly from a high of 20%. Turned to the tanks and with bean reduced to 8/64 in., production was 568 bbls. of oil and 890,000 cu. ft. of gas with 1755 lbs. on the tubing and 2910 lbs. on the casing. It was necessary to bleed the casing head to keep the pressure under 3000 lbs. Samples of the gas ranged from 2.4 to 2.7 gallons of casing head gasoline per 1000 cu. ft.

Very little is yet known of the deep structure but there is some indication that it may be found approximately

LOS ANGELES BASIN WILDCATS

Area	Well	No.	Section	Depth	Status
Athens	Rankin & Williams	1	7, 3-13	9098	Fishing D. P.
	Barnsdall Oil Co., Honor Rho A-17-1		5, 4-16		Grade
Castaic	Colter, R. T., Explor.	1	8, 4-17	1350	Idle
	Jasper, Fred S.	1	17, 4-17		Location
	Morse-Mangold, Inc., McDermott	1	26, 5-17		Rig
	Western Gulf Oil Co., Lechler	2	31, 5-17		Location
	Worland Oil Co., Jenkins-Owens	1	18, 5-16	2940	Idle
Dominguez, West	Hiles Drilling Co., Grant	1	29, 3-13	7660	Testing W.S.O.
	Wood-Mellon Oil Co., Wood	1	31, 3-13	7498	Idle
Newhall	Aztec Oil Co., Sanborn	1	6, 3-16		Grade
	Purman, Thos. H. T., Needham	1	13, 3-16		Grade
	So. Calif. Drlg. Co., Needham	4	13, 3-16	4398	Idle
	The Texas Co.	1	14, 3-16		Location
Redondo	Pettijohn, J.E., Dominguez Estates	1	5, 4-14		Grade
	Orange County				
Costa Mesa	Thompson, Milton N., Banning	1	9, 6-10	5649	Idle
Kraemer	Valley Petroleum Co., Kraemer	1	25, 3-9	604	Idle
Olive	Tide Water Assoc. Oil Co., Olive-Orange	1	19, 4-9		Rig
	San Bernardino County				
Carbon Canyon	May, Homer, Oasis	1	31, 2-8		Rig

NORTHERN COUNTIES WILDCATS

County	Well	No.	Section	Depth	Status
Contra Costa	Lafayette Oil Co., Morris	1	28, 1n-2w		Location
Humboldt	Daly, M. B., Jr.	1	2, 1n-2e	800	Drilling
Merced	Don Pedro Oil Co.	1	9, 6s-9e	1906	Idle
Mendocino	Keyt, N. F.	1	3, 12n-17w	250	Drilling
Monterey	Loma Grande Oil Co., Corey	1	23, 24s-10e	2175	Idle
	Priest Valley Pet. Co., Greve	1	22, 20s-12e	2885	Idle
Sacramento	Harkness, Tracy	1	35, 8n-4e		Rig
San Joaquin	Standard Oil Co., Blewett	2	25, 3s-6e		Location
San Mateo	Ra-Lite Petroleum, Inc., Bell	5	16, 7s-4w	1200	Idle
Yuba	Wright, L. G., Cox	1	18, 14n-5e	1795	Idle

conformable to the upper zones. The top of the Miocene is placed at 6970 ft. in the Smith well against 7350 ft. in the Sentous well and even lower in Standard Oil Co.'s L. A. I. No. 3-1 which is now prospecting at 9500 ft. Smith No. 1 encountered the top of the oil zone about 300 ft. higher than its predecessor. Bottom is in hard, impervious gray sandstone.

Development of the new zone will get under way immediately with R. R. Bush Oil Co. already grading location for Merchants No. 1, S. M. Brooks preparing to drill the Ron C. Smith homesite and The Texas Co. planning an offset to the discovery well. Several other lease deals are pending which will result in new drilling.

Aztec Starts Newhall Test

An important new wildcat is being started by Aztec Oil Co. on the north flank of Pico Anticline in the northeast corner of the southeast quarter of sec. 6, 3-16 near Newhall. The well will seek production in the Modelo or Upper Miocene formation which is prolific at Newhall-Potrero and Del Valle, the nearest flowing well fields.

The location was chosen on the theory that the sub-surface high of the anticline is off-set to the northeast at depth and that, due to surface erosion, 6000 ft. of hole is adequate for a test. Faulting is depended on for complete closure.

Particularly interested in the play are Barnsdall Oil Co., Pacific Western Oil Co., Standard Oil Co. and Royalty Service Co., all of which hold acreage in the immediate vicinity.

Weather Delaying Texas at Newhall

Laid at the door of the weather man is The Texas Co.'s failure to start work on its projected Newhall wildcat. The water soaked ground has not been in condition for grading but operations are expected to begin shortly. Site of the well will be in sec. 14, 3-16 south of Newhall.

Wilmington Outpost Proves Good Well

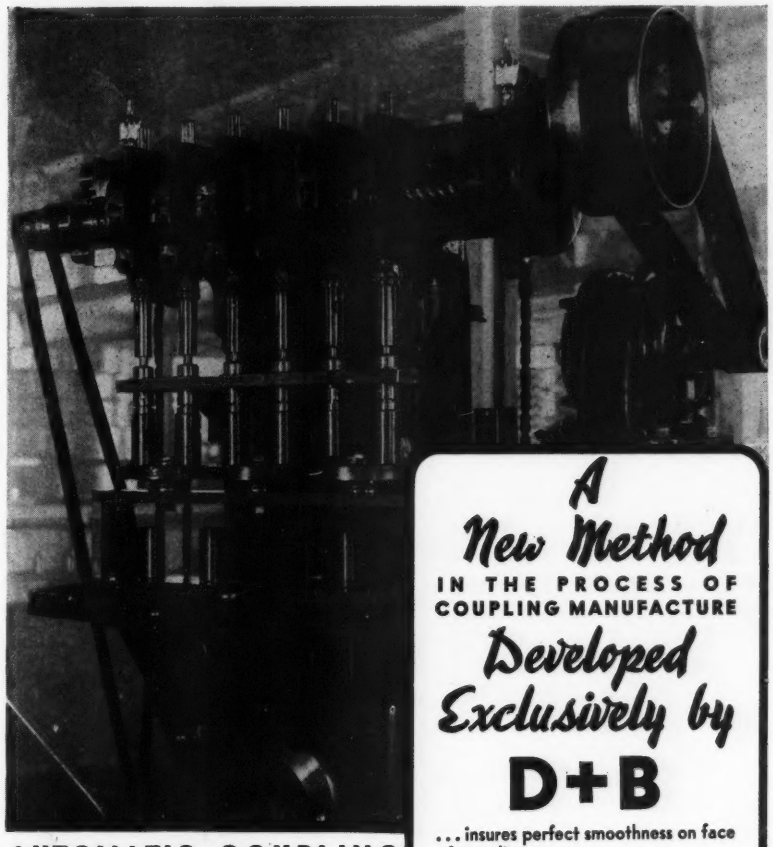
Pumping steadily at the rate of 175 bbls., Acoma Oil Co. brought in its No. 1 as the best looking well yet in the Torrance-Wilmington section. Bottomed at 3768 ft. and with the Upper Terminal zone open below 3750 ft., the hole was washed with hot oil after which it flowed voluntarily at an estimated 100 bbl. rate for several days while being rigged to pump.

Although not on production long enough for a final determination, the gravity appears to be about 20 degrees. The cut is cleaning up, the last being 10.0%.

The Acoma well, located north of Rubidoux St. and east of Figueroa St., definitely established the area as commercially productive and worthy of development.

Several new projects are expected to get under way in the next two weeks among which will be Acoma No. 2, DeMarsh Oil Co. Phillips No. 1, and Los Angeles Basin Petroleum Co. No. 1. Geo. Noonan also plans to drill at the intersection of "L" St. and King St. as soon as permits can be arranged.

Casing programs of the last two wells have been simple, consisting of a single string of 6⅝ in. landed on bottom and perforated in the oil zone. Cementing jobs were effected at approximately 1000 ft. and above the oil sand. No special problems are encountered in drilling here and all the hole can be made in a few days.



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Coyote Outpost To Set Casing

California National Oil Co.'s well No. 1, reportedly taken over by Inspiration Oil Co., will set casing as soon as roads are in condition for heavy hauling. The 3400 ft. hole has been idle for several weeks.

Two wells are active in the west end deep zone at East Coyote. Union Oil Co. is testing Toussau No. 2 after replugging bottom to 7227 ft. with results, so far, indicating the water trouble is not yet solved. Standard Oil Co. is deepening Coyote No. 2-10 below 6550 ft.

Carlton B. Wood's Basten No. 1, only driller in last year's hot spot, is near the make or break stage at 4000 ft.

Castaic Development Delayed by Storms

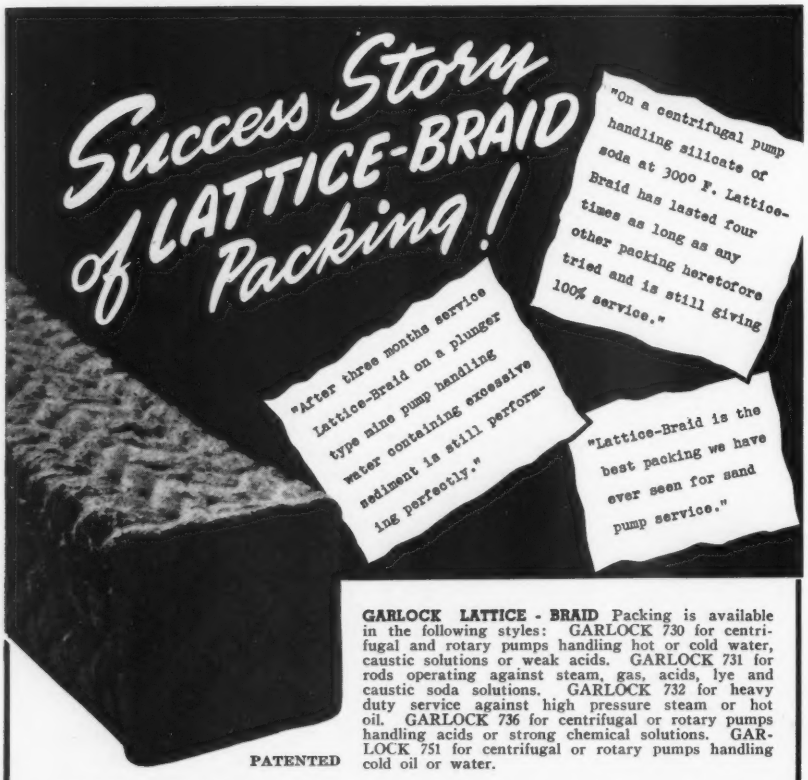
Heavy rain storms delayed development work but did not succeed in dampening the enthusiasm of operators in the Castaic region. On the Los Angeles County Honor Prison Farm, Barnsdall Oil Co. has repaired washed out roads and is preparing to build a derrick for a test well in sec 5, 4-16.

Western Gulf Oil Co.'s Lechler lease, where No. 1 is pumping about 50 bbls. a day from 2400 ft., was practically inaccessible for days, but the company is now going ahead with preparations to drill No. 2 in sec. 31, 5-17.

Farthest along of all in the area is Morse-Mangold, Inc. which is ready to install drilling machinery in its rig on the McDermott property in sec. 26, 5-17.

Fred S. Jasper is planning to start a well soon west of the Del Valle field in sec. 17, 4-17.

The Castaic district remains the "hottest" in the state and it is probable more wildcats will be spotted within a short time.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Tide Water Seeks Field Near Orange

Seeking a new field near the easterly rim of the Los Angeles Basin, Tide Water Associated Oil Co. has a derrick up to drill Olive-Orange No. 1 about half way between the towns from which the well name is taken. The location is given as 2000 ft. west of Batavia St. and 450 ft. south of the Southern Pacific railroad tracks in sec. 19, 4-9.

Two Wells Drill Del Valle Field

R. E. Havenstrite, Operator, is drilling two wells at present in the Del Valle field, both of which will extend production to the south. Universal Consolidated Oil Co. plans to move an outfit from Rosecrans soon to drill on the Dennis property in sec 31, 4-17.

Dominguez Deep Test Proves Disappointing

Union Oil Co.'s super-deep Callender No. 79 at Dominguez proved to be a disappointment when tested in the interval 10,010-10,314 ft. Swabbed to 9500 ft., fluid recovery was at the rate of 60 bbls. a day cutting 95% water with a salt content of 290 grains per gallon. The 12,720 ft. hole is now cleaned out to 12,430 ft. where a liner will be landed and another production test made. On the same lease, Union is completing No. 82 after redrilling to 7100 ft. and landing a 5½ in. combination string containing 146 ft. perforated on bottom. The pipe was cemented through perforations at 6940 ft. with 450 sacks.

Union is drilling Austin No. 7 at 6960 ft. and is grading location for Callender No. 84.

At the extreme west end of the field,

Hiles Drilling Co. is preparing to test the Seventh Callender zone in Grant No. 1 after setting casing at 7200 ft. The well was drilled last year to 7660 ft. by Gus Pongratz.

Deep Signal Hill Well Pumps 50 Bbls. a Day

Long Beach Community No. 19, Union Oil Co.'s try for deep production on Signal Hill, appears to be a dismal failure. Located as an offset to Dormax Oil Co.'s No. 1 which is still producing 200 bbls. a day after more than a year, Union's project is making only 50 bbls. net oil and 200 bbls. of water on a fluid operated pump. No. 19 is the deepest well ever drilled on the famous hill, being bottomed at 10,894 ft. The hole is plugged to 10,582 ft. and casing cemented at 9657 ft.

Production of Royalty Service Corp.'s I. C. No. 1 on California Ave. south of Wardlow Road has been disappointing on the pump, the rate approximating 50 bbls. daily of 29 gravity oil cutting 4.0%. A 200 ft. interval is open to 6540 ft.

Best of the recent reconditioning jobs was Shell Co.'s Stakemiller No. 4 which was redrilled to 4625 ft. and finished with a liner perforated at intervals below 3260 ft. Production is 75 bbls. a day with a 0.3% cut.

Apex Petroleum Co. completed Morris No. 17 with 300 ft. open to 3100 ft. pumping 100 bbls. of 24 gravity oil cutting 8.0%.

Developments Darken Rosecrans Picture

Developments at Rosecrans of late all tend to discourage extensive new activity. Deep wells near the intersection of Figueroa St. and Rosecrans Blvd. have found but little encouragement while Royalty Service Corp.'s southerly outpost, Stein No. 1, would not flow and is being rigged to pump. St. Anthony Oil Co.'s Gordon No. 7, located at the northeast corner of Redondo Beach Blvd. and Broadway, tested wet and plugged bottom from 8077 to 8058 ft.

The jinx that seems to follow Union Oil Co.'s tries for deep production is holding good in Rosecrans No. 45 which, bottomed at 9618 ft., has recovered only a little oil and salt water.

Universal Consolidated Oil Co.'s Trust No. 8, a 9350 footer, has had little better success.

Athens Wildcat Nears Obective

Southern California Petroleum Corp.'s Howard Townsite No. 1 is drilling below the 7500 ft. level and rapidly nearing the objective sands which should be found near 8000 ft. Located at the southwest corner of 122nd St. and Vermont Ave., the well will open a new field if successful in obtaining production.

Many Redrill Wilmington Wells

Many operators throughout the Wilmington field are redrilling their older wells and installing pre-gravel-pack type liners with very good results. Initial production after the redrill job, in some cases, compares favorably with the first completion.

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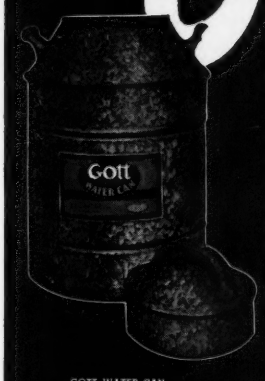

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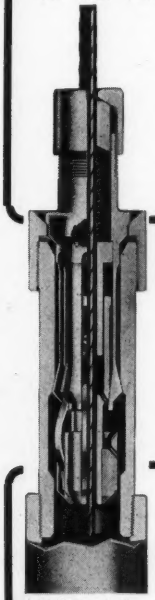

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San Joaquin Valley

Grapevine Test Near 11,000 Ft.

Richfield Oil Corp.'s Tejon Ranch No. 1, in sec. 2, 10-19, is drilling in siltstone at 10,738 ft. with no showings reported. Believed to be in Eocene age horizons, it is the first in the area to penetrate to this depth. The well, located southeast of the Grapevine Pool, is designed as a geologic test of large Richfield holdings in the south end of the Valley.

Northwest of the Grapevine Pool, in sec. 19, 11-19, Kern Line Oil Co. is cleaning up wreckage after recent high winds destroyed the derrick over well No. 1. Deepening was in progress at 8390 ft. after tests of showings had failed at 8290 ft.

Continental Oil Co. has not yet started on Tejon No. A-1, a proposed test of a structural high near the east quarter corner of sec. 28, 11-19, due north of small production previously found in the area.

Fresno Co. "Cat" Drills Siltstone

The Texas Co.'s most recent Cantua Creek area try, S. P. No. 27-13 in sec. 13, 17-15, is drilling in siltstone with streaks of sand at 9310 ft. without yet having reported showings. The current well, 15th of a series in the area, is located a half mile northwest of the company's S. P. No. 1 which flowed a small amount of condensate, gas and salt water from Eocene sands at 9413 ft.

Previous drilling in the area has ranged down to 12,300 ft. with most wells showing enough to maintain interest in the area. First interest in the area was shown in 1937 when Western Gulf Oil Co.'s S. P. L. No. 3, in sec. 3, 17-15, drilled to barren Eocene at 8531 ft. and was plugged to Temblor sands at 6950 ft. where some 35.8 gravity oil was recovered.

Bolling Quits Quinn Project

R. S. Bolling's Quinn No. 2, in sec. 14, 25-27, was put on the hook at 2359 ft. Bottomed in greenish Walker clay, the well marked a few oil stains from 2266 ft. to bottom after finding the top of the Walker at 2140 ft. Top of the barren Vedder was found at 2121 ft.

This well was drilled in an effort to find production suggested by the small amount of heavy oil Dilamar Pet. Corp. found in Quinn No. 1 during 1938. In this well the oil was quickly replaced by water, and although showings have been found by later wells in the area, no free oil has been recovered.

Drilled in search of Vedder production, F. B. Copelands Thomas No. 1 in sec. 15, 26-27 was also unfruitful. Bottomed in gray sand at 2830 ft. the well topped the barren Vedder at 2801 ft.

A. J. Borget is planning to resume drilling Kendall No. 1 in sec. 16, 25-27, now idle at 430 ft.

No work has yet been done at the site of Shell Oil Co.'s Smith No. 77-11 in sec. 11, 26-27 because of soggy ground conditions.

Strand Deep Test Completes in Stevens

Tide Water Associated Oil Co.'s attempt to find Vedder zone production underlying the Strand field failed when its deep test, KCL No. E-25-7 in sec. 7, 30-26, bottomed in silty shale at 12,818 ft. after finding gray sand believed to be the Vedder at 12,532 ft.

The full cost of the deep hole was not lost however, for the drill had already passed through the field's normal producing Stevens zone. Plugged to 8750 ft., 30 holes were shot in the 9⅝ casing, already cemented at 8885 ft., from 8725 to 8710 ft.

At last report the well was flowing through a tester at a 2018 bbl. gross rate under 300 lbs. pressure. Gas was estimated at 750,000 cu. ft. Net recovery consisted of 1211 bbls. 33.4 gravity oil.

When the 40% water entry has been located and corrected it is apparent that the well will be a good Strand Vedder zone well.

B. V. Hills Well Below 12,500 Ft.

Honolulu Oil Corp.'s No. 25-P up on the Buena Vista Hills in sec. 10, 32-24 continues to make hole. Last reported at 12,617 ft. the well was in hard shale thought to be Lower Miocene. Drilling with electric equipment designed for only moderate depth, the job is a marvel of persistence. Due to the fact that the formation is very tough, aggravated by depth beyond the normal expectancy of rig specifications, drilling is of course slow. All observers agree, however, that the rate of speed and comparative lack of trouble is nothing short of amazing.

At the time the project was started, it was understood that the job was to be as thorough and deep a geologic test as the equipment would stand. This understanding is vindicated. Thanks to a high structural location, the well has already penetrated much deeper into the

SAN JOAQUIN VALLEY WILDCATS

Area	Well	No.	Section	Depth	Status
	Fresno County				
Cantua Creek	The Texas Co., S. P.	27–13	13, 17-15	9327	Drilling
	Kern County				
Belridge—South	Santa Mora Oil Co.	1	10, 28-20	544	Idle
Buttonwillow	The Texas Co., S. P.	47–15	15, 29-24	7956	Redrilling
Devils Den	Herzog, R. D., Collins	1	26, 25-18	180	Drilling
	Herzog, R. D., Marine	1	26, 25-18	708	Idle
Edison	Goodrum & Vincent, Inc., S. P.	7	31, 29-30	460	Idle
	Kern Valley Drlg. Co., Williams	1	30, 30-30	530	Cleaning out
Grapevine	Continental Oil Co., Tejon	A-1	28, 11-19		Location
	Kern Line Oil Co.	1	19, 11-19	8390	Rig wrecked
	Richfield Oil Corp., Tejon Ranch	1	2, 10-19	10736	Drilling
Maricopa	Bankline Oil Co., Well	24–24	24, 11-23	2235	Drilling
McClung	Union Oil Co., KCL	31–3	3, 30-26	3639	Drilling
Richgrove	Borget, A .J., Kendall	1	16, 25-27	430	Idle
	Bolling Oil Co., Quinn	2	14, 25-27	2359	Abandoned
	Copeland, F. B., Thomas	1	15, 26-27	2830	Abandoning
	Shell Oil Co., Smith	77–11	11, 26-27		Location
Shafter	Continental Oil Co., KCL	C-2	35, 27-24	11301	Drilling
Union Avenue	Hancock Oil Co., Roberts	2	6, 30-28	4411	Drilling
	Kings County				
Kettleman So. Dome	Bristol Oil Co., Smith	1	35, 24-19	8054	Testing
Pyramid Hills	Chanslor-Canfield Midway Co., Bocquarez	1	17, 24-18	1245	Perforating
	Pyramid Prod. Co., Spreckles	2	16, 24-18		Rig
	Tide Water Assoc. Oil Co. West Slope	76	20, 24-18		Rig

geologic column than deeper wells on the Valley floor at the base of the hills. No important showings have been reported to date.

Amerada Completes Coalinga N. E. Well

At the east flank of the Coalinga Northeast field, Amerada Petroleum Corp. finished S. P. L. No. 24-17B establishing a potential of 3204 bbls. Located in discovery sec. 17, 19-16, the well was bottomed at 8205 ft. and 5½ in. casing cemented on bottom. Gun perforated from 8187 to 8192 ft. with 10 holes and with 2½ in. tubing hung at 8148 ft. the well was completed in 35 days elapsed time. Drilling was done by Bell & Loffland.

The potential flow was made through a 24/64 in. bean under 1050 lbs. tubing pressure and 1250 lbs. casing pressure. Gas was metered at 1,620,000 cu. ft.

Frampton Drills Kern River Well

Ray Frampton is drilling well No. 3 in sec. 27-28-28 at the east edge of Kern River production. Oil sands are found at relatively shallow depths in this fuel oil producing field, with production coming with a great deal of water from the Kern River series of the Pliocene which rises sharply to the east. The current well is reported bottomed in oil stained sand at 415 ft.

Da-Me Oil Spuds Mount Poso Try

Near the west quarter corner of the southwest quarter of sec. 27, 26-28, Da-Me Oil Co. has spudded Well No. 2 for a try at Vedder Zone production. The location is near isolated Vedder zone wells operated by Recovery Oil Co. and Westates Oil Co. to the south.

Shell Oil Co. is rigging up to drill Matthew Fee No. 8 in sec. 4, 27-28. Located west of present production on a lease at the north end of Mount Poso proper, the well will attempt edge production. It is thought probable that the well will be good since it appears on contour maps to be higher than wells still farther west near the south line of the section.

It is thought probable that the increased demand for heavy oil will stimulate considerable drilling of this type in East Valley fields.

Shafter Wildcat Nears Objective

Continental Oil Co.'s Vedder zone try, KCL No. C-2, is drilling at 11,163 ft. near the north quarter corner of sec. 35, 27-24. Latest of a series of 13,000 ft. holes drilled along the axis of Wasco, Rio Bravo and Greeley fields, the well seeks a high point which will yield high gravity Vedder oil.

Slight oil showings have been found in all of the prior trys but none have proved capable of production.

Hancock Coring 2nd Avenue Well

Hancock Oil Co.'s second well on the Roberts property at the south edge of Bakersfield is coring for the oil sand at 4380 ft. Located in the discovery section 6, 30-28, the well is trying for the sands which resulted in a 180 bbl. pumper in well No. 1.

Oil Sand Cored In Elk Hills Try

Standard Oil Co.'s No. 44-29S on sec. 29, 30-24 in the Elk Hills field plugged from 3900 to 3232 ft. and is being completed with 7 in. casing cemented at 3185 ft. Located at the north flank of an undeveloped strip between the two pools comprising the Elk Hills field, a well here will materially increase proved reserves in the area.

Standard meanwhile is drilling at 6600 ft. in it's projected deep try near the north quarter corner of sec. 31, 30-24, a little more than a mile to the southwest. This well is rigged with heavy duty equipment all the way, and is expected to go as deep as necessary to properly examine the area, unless substantial production is found at moderate depth.

Union Oil Spuds McClung Wildcat

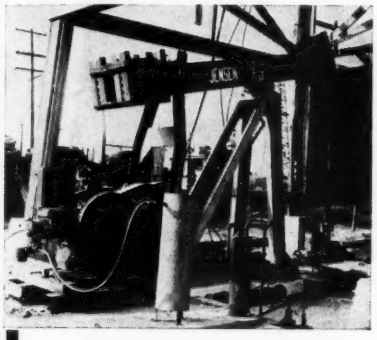
Intended as another shot at Vedder zone possibilities southeast of the Greeley field, Union Oil Co.'s KCL No. 31-3 is drilling at 3700 ft. near the north quarter corner of the northwest quarter of sec. 3, 30-26.

Located on a line extended southeasterly along the axis of the Greeley field, the well is the latest of many to attempt production along the trend. Other wells have prospected the deep zone without success, but all have found sand bodies which could prove productive if found in a saturated closure. This is the crux of the current try, to find such a closure.

It is probable that the well will test in passing the Stevens zone which flowed momentarily in Superior Oil Co.'s KCL No. 9 in the same section. This well was swabbed in October 14, 1937 flowing 850 bbls. of clean 33 gravity oil. After an hours' flow, mud broke in and killed the well. Subsequently redrilled, swabbed, and finally placed on gas-lift, the well never again produced. This has remained as a vagary of the area, unexplained and unrepeated in succeeding wells.

Valentine Re-elected Auto Club Executive

W. L. Valentine, president of Fullerton Oil Co. has been reelected a member of the board of directors of the Automobile Club of Southern California.



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Coastal District

Rincon Deep Test Drills at 4981 Ft.

Hobson No. C-9, Chanslor-Canfield Midway Oil Co.'s scheduled deep test at Rincon, was last reported in brown shale at 4981 ft. after cementing 11¾ in. casing at approximately 4200 ft. The company is fishing out the liner in Hobson No. B-16 to deepen and is rigging up to spud in No. B-44.

Richfield Oil Corp. has done nothing more than survey the location for Hobson-U. S. No. 3 on the north flank of the field.

O. C. Field Drills New Shiells Well

O. C. Field Gasoline Corp. has chosen a location for Calumet No. B-4 which will be drilled in the easterly section of the field 375 ft. north and 106 ft. east of the southwest corner of sec. 3, 3-19. Operations will start at an early date.

The Texas Co.'s last completion, Shiells No. 140, was pumped in from 4100 ft. at the rate of 70 bbls. a day of 33 gravity oil cutting 5.0%.

Tide Water Completes Big Avenue Producer

A big well even for Ventura Avenue was Tide Water Associated Oil Co.'s Ventura Land & Water No. 47 away out toward the east end of the field. With bottom at 10,180 ft. and casing cemented at 9743 ft., initial production was at the rate of 3500 bbls. of oil and 5,125,000 cu. ft. of gas a day through a 1 in. flow bean. Pressures were 650 lbs. on the tubing and 900 lbs. on the casing head. Gravity of the oil was 32.1 degrees, API.

Offsetting T. W. A.'s prize well to the north, Lloyd Corp. is drilling below 7800 ft. in Well No. 7.

In the central portion of the field, Alliance Petroleum Corp. is drilling below 5000 ft. in Hartmann Ranch No. 3 and is building a derrick for Hisey No. 4. British American Oil Producing Co. is preparing to drill No. 12 on the Bolsa Chica Oil Co. Hartmann lease.

Heavy Rains Halt Exploration Work

The heavy rains of the past few weeks have virtually brought to a halt exploratory work in the Coastal counties where rough topography makes road building and maintenance a major problem under the best of weather conditions. Many operators have suspended operations entirely until the stormy season is definitely over because of the excessive cost of attempting to keep roads open to their wells.

One of the few consistently working is South Mountain Oil Co. which is down over 2650 ft. on the south flank of the South Mountain field in Ventura county. New wells were spudded in by Havlin & Pottenger at Eureka Canyon and C. P. Johnson, Jr. at Timber Canyon.

Maricopa Trial Cores Gray Sand

Hall-Baker's portable rig had at last report carried Bankline Oil Co.'s Maricopa wildcat No. 24-24 in sec. 24, 11-23, to 2235 ft. Formation cored at bottom was reported as gray sand. No showings have been reported to date in this well on the flats southeast of the Midway-Sunset field.

Union Oil Tests Santa Maria Well

After landing 5¾ in. casing on bottom at 5580 ft. and cementing at the top of 223 ft. perforated interval, Union Oil Co. is completing Stinson No. 2 at Santa Maria Valley. Located near the south edge of production in sec. 28, 10-34, the well is a "slim-hole" project employing 12¾ in. surface casing and a 5¾ in. combination water-oil string. Adjoining the Stinson lease, Union Oil Co. is drilling Nicolai No. 2.

The company's southeast outpost, Fleisher No. 1 in sec. 31, 10-33, is fishing for a new type pump.

Union Drills Orcutt Well

In the old Santa Maria-Orcutt field, Union Oil Co. is drilling Cal-Coast No. 19 below 3575 ft. and is preparing to build a derrick for Dome No. A-15. Both locations are in proved territory.

Continental Completes San Miguelito Project

Finishing Grubb No. 21 with approximately 1400 ft. open to bottom at 6884 ft., Continentil Oil Co. brought in 460 bbls. a day of new 33° gravity clean oil production at San Miguelito. The gas yield was 2,300,000 cu. ft. daily. Drilling equipment was immediately moved to No. 22 which is now below 3200 ft. in depth.

In Padre Canyon, Gentral Petroleum Corp. was forced to abandon the Padre No. 2 location because of land slides during the heavy rains and is moving the derrick to a new site.

J. D. Robinson Adds Coast to Valley Duty

J. D. Robinson, Union Oil Co. San Joaquin Valley division superintendent, has assumed direction of production activities for the company in the Coastal division in addition to his other duties. H. A. Brett, formerly in charge in the Coastal division, has been transferred to the Los Angeles Basin division.

COASTAL COUNTIES WILDCATS

Area	Well	No.	Section	Depth	Status
	Santa Barbara County				
Goleta	Del Mar Oil Co., Rowe	1	11, 4-28		Rig
	San Luis Obispo County				
Huasna	Tex Harvey Oil Corp., Gilmore Comm.	1	11, 32-14	4518	Pulling liner
	Tex Harvey Oil Corp., Gilmore Comm.	2	11, 32-14	2200	Idle
	Ventura County				
Bardsdale	Hopland Oil Co.	1	1, 3-19	985	Idle
Oxnard	Bender, E. A., Farrell	1A	5, 1-22	7005	Idle
Piru	Nelson, D. V., P.F.C.—C.H.	1	19, 4-18	1310	Drilling
	Havlin & Pottenger, Alice	1	33, 4-18	50	Drilling
	Oilexco, Inc., Newhall-Land	2	2, 3-18	570	Idle
	Oilexco, Inc., Stevens	1	34, 4-18	373	Idle
Sespe	Inter Counties Fuel Co.	1A	22, 4-19	510	Idle
	Signal Petroleum Co., Hadley	7	13, 4-19	2885	Idle
South Mountain	Comstock Pet. Co.	1	17, 3-29	1800	Idle
	South Mountain Oil Co.	1	10, 3-20	2310	Drilling
Timber Canyon	Fletcher, A.B., Timber Canyon	3	18, 4-20	1360	Idle
	Johnson, Chas, P., Jr.	1	24, 4-21	110	Idle

H. C. Eddy Promoted By Petroleum Rectifying

Announcement has been made of the appointment of Harold C. Eddy to the position of general manager of Petroleum Rectifying Co. of California.

H. C. Eddy

In length of service, Mr. Eddy is the oldest member of the Petreco organization, having been with the company for twenty-seven years. He is a graduate of Colorado School of Mines and one of the pioneers in crude oil dehydration work. For the past few years he has been actively engaged in developing and perfecting the Petreco Electrical Desalting Process. He is the author of numerous articles and papers on crude oil dehydration and desalting and is recognized as one of the leading authorities on these subjects. Numerous patents covering improved processes and apparatus have been issued to him. His work with the company has kept him in close touch with all phases of the business, including field work, research, engineering and business administration.

Mr. Eddy enjoys a wide acquaintance throughout the oil industry and his many friends will be gratified to learn of his advancement.

A. D. Mitchell Heads Stripper Well Assn.

A. D. Mitchell, well known Signal Hill oil operator and supply man, was elected president of the California Stripper Well Association at the annual meeting. Robert C. Davis of the Davis Investment Co., and Neal Elder of Morton and Elder, were re-elected as vice-presidents, while Chester F. Dolley, head of the Atlantic Oil Co., was named to fill the vice presidency vacated by A. D. Mitchell. Thomas H. Work, of the Nordon Corp., was elected secretary-treasurer of the stripper well group and Richard Fenton, executive vice-president of the association since its inception, was re-elected to office. All officers of the organization have producing interests in Los Angeles Basin as well as in other parts of the state.

The new president of the association, A. D. Mitchell, is president also of the Coast Supply Co. and the Lacal Oil Co. and operates in excess of fifty producing oil wells. He is a director of a number of other small oil companies as well as being a director in several companies not identified with the oil industry. He is a member of the Long Beach Rotary Club, the Virginia Country Club, Oil Field Service Association, and the Pacific Coast Club as well as being active in many Southern California civic and charitable affairs.

Directors of the association for 1941 are: P. N. Baker, Shasta Petroleum Corp.; George F. Brayton; Edwin P. Crail, Crail Brothers; William H. Cree; Robert C. Davis, Davis Investment Co.; Chester F. Dolley, Atlantic Oil Co.; Neal Elder, Morton and Elder; D. W. Elliott, Trinity

A. D. Mitchell

Oil Co.; F. E. Fairfield, Oil Tool Corp.; Richard Fenton; L. W. Frankley, Iroquois Oil Co.; Wilbur Harrison, Apex Petroleum Corp.; Jack Herley, Indiana Drilling Co.; A. S. Johnston, A. S. Johnston Drilling Corp.; James Michelin, Vulcan Oil Co.; A. D. Mitchell, Coast Supply Co.; W. H. Morgan, R. R. Bush Oil Co.; V. L. Norman, Woolner Oil Corp.; V. R. G. Wilbur; C. G. Willis, Basin Oil Co.; and T. H. Work, Nordon Corp.

A desk file for automobiles pulls out from beneath the dash, makes 750 indexed cards available. Top serves as a writing desk.

Victor H. Wilhelm Called to Navy Duty

Victor H. Wilhelm, long prominently identified with the California Oil Industry and formerly chief petroleum engineer of The Texas Co. has recently reported for active duty with the Navy.

Lieutenant Commander Wilhelm, Stanford Alumnus, knew Alaska and Mexico early in his career—traveled extensively in Europe—served California State in early development of oil—with The Texas Co. during later spectacular oilfield discoveries — recently returned from New York and Washington to take over the Naval assignment.

Naval Reserve Officers in and about Los Angeles honored him with a farewell dinner.

Standard Celebrates 700th Symphony Hour

March 13, at 8:00 p.m., the Standard Oil Co. of California broadcast the 700th consecutive "Standard Symphony Hour." This program is probably one of the oldest radio network broadcasts, having developed from a small two city hook-up between San Francisco and Los Angeles thirteen years ago into its present coverage of California, Washington and Oregon over the thirty-two stations of the Mutual-Don Lee Broadcasting System.

This program, whose characteristic opening fanfare of trumpets has been heard in literally millions of Western homes, is almost unique in present day radio because it is still absolutely free from commercial announcements. Nothing disturbs the listeners quiet enjoyment of this hour of fine music except the required pauses for station identification.

Hand in hand with the cultural pioneering of the "Standard Symphony Hour" has been the educational pioneering of the "Standard School Broadcast." For the last 12 years, this informative broadcast has gone out on Thursday morning to half a million Western school children in over 4,500 schools, bringing the story of the world's great music into even the most isolated communities.

The 700th performance of the "Standard Symphony Hour" will be broadcast by the San Francisco Symphony Orchestra under the direction of Pierre Monteux, the distinguished French musician, who now makes his home in this country. The program will be an all-request one, and will include well loved selections by Tchaikovsky, Wagner, Schubert and Beethoven.

Engineering, Technology, latest news—twice a month in California Oil World.

Westinghouse Names Coast Assistant to Dist. Manager

W. J. Howell, of Pittsburgh, Pa., who has been associated with Westinghouse for the past 10 years in various engineering and sales capacities, has been named assistant to the manager of the Pacific Coast District, Westinghouse Electric & Manufacturing Co. Announcement of the appointment was made here today by Chas. A. Dostal, Pacific Coast district manager. The new assistant to district manager succeeds Paul V. Whaley, who was transferred east several months ago.

In his new post, Mr. Howell will assist Mr. Dostal in the conduct of company activities in the District's territory, extending east to Salt Lake City, northeast to Central and Western Montana, south to the Mexican border, and southeast to El Paso County, Texas.

A native of Pittsburgh, Mr. Howell attended grade and high schools there and was graduated from the University of Pittsburgh in 1931 with an electrical engineering degree. Shortly after graduation, he joined Westinghouse at East Pittsburgh.

(Continued from Page 21)

Another working display demonstrates the removal of Hamer E-Z Out Slush Pump Valve Seats. This consists of a replica of a large valve seat port and a means of pressing the E-Z Out Valve Seat into the tapered port with great tightness to correspond to the firm seating that results under the pounding of the valves in actual service. The valve seat is then lifted by means of the super-pressure grease gun designed for that purpose. A slush pump rod is also provided, so that the removal of Hamer E-Z Out Slush Pump Pistons can be demonstrated, using the same super-pressure grease gun.

The center deck of the Display Truck carries an array of various types of plug valves, including the new double grease seal plug valve for use on lines carrying butane and other hard-to-hold liquids and gases. The new non-lubricated high temperature plug valve is included.

All types of Hamer Line Blinds are displayed on the rear deck in sizes ranging from 1 inch to 12 inches. In addition to the various types of line blinds with which the trade has been familiar for several years are two types of flanged blinds especially designed for refinery and process plant applications, as well as for use in drilling areas, on standpipes, mud storage tanks and in other locations where a simple, inexpensive but quickly operated line blind is desirable. Special emphasis is placed on the line blinds because, according to Mr. Hamer, this now is the most extensive line of equipment of this sort offered by any manufacturer.

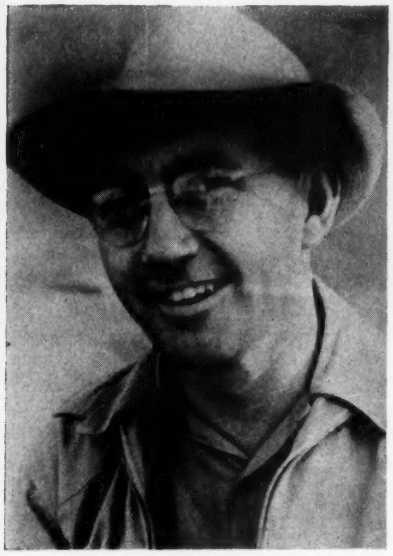
Looking over one of the Franks Manufacturing Corp.'s portable rotary drilling units at the Franks plant in Tulsa are James C. Kelley, left, sales representative of the Franks California distributor, Hillman-Kelley Inc., and James Moon, design engineer of Franks. Kelley is in Tulsa to work with the Franks engineering department in Tulsa during the next two weeks, helping to design trailer-mounted units for the Franks portable rotary drilling rigs and telescoping servicing derrick units, which will comply with California road laws, so the units may be transported over the road without special permits. At present, the heavy truck-mounted units in California cannot operate on the highway without permits, but the new trailer-mounted units will break the weight into two units, making the weight of each unit come within state regulation. The unit in the photograph has been sold for delivery in California.

Patterson-Ballagh New Kelly Pipe Wiper

In order to prevent excess rotary mud from contacting the metal rollers of roller bearing Kelly Bushings, an all-rubber pipe wiper has been developed by Patterson-Ballagh. The wiper consists of a heavy round disc of the same type of rubber as used in protectors. The center is holed square to fit the shape of the Kelly. It is inserted in the lower part of a Baash-Ross Roller Bearing Kelly Bushing. By its use it is unnecessary to use wash water on the Kelly and there is no dilution to the mud. The device is made in three types, to fit three types of Kelly Bushings. One of the types includes a wiper bracket to which the rubber element is bolted. Second type consists of the rubber element only. Further details may be obtained from the manufacturer, Patterson-Ballagh Corp., 1900 E. 65th St., Los Angeles, Calif.

S. R. Bowen Co. Announces Promotions

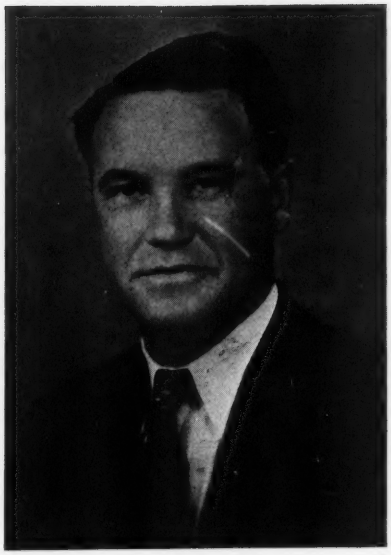
The S. R. Bowen Co. has announced the consolidation of their entire rental department at Santa Fe Springs to facilitate service to the California operators. This change has occasioned transfers, promotions and addition in personnel.



Henry M. Lowe

Henry M. Lowe has now been appointed service manager for Southern California, having been transferred from Bakersfield where he held the position of store manager. Dick Hendricks has been appointed assistant service manager for Southern California. Walt Meyers continues on as service man and Roy Barnhart has been added to the

J. J. Long



"Tex" Francis

growing organization in the capacity of service man.

J. J. Long who was formerly a service man in the Los Angeles Basin area has been transferred to Bakersfield to occupy the position of store manager for that area.

"Tex" Francis who has been a service man for a number of years at Avenal has been appointed store manager of that territory.

New Grove Regulator Plant and Offices

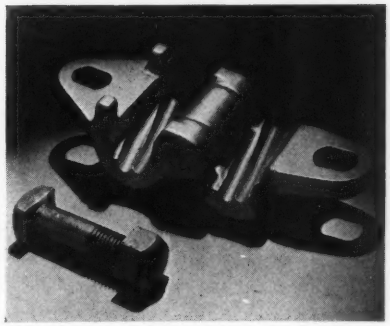
The Grove Regulator Co. has recently moved into its new modern offices and plant located at 1190 67th St., Oakland, Calif. Embodying the very latest in plant design and construction, the new structure provides vastly enlarged engineering, production and testing facilities. According to M. H. Grove, president of the firm, the expansion is necessitated by the steadily and continuously increasing business in the petroleum as well as in other industries.

One of the features in this new factory is a complete, up-to-the-minute testing laboratory, which is considered one of the finest of its kind. It is manned by an experienced and competent staff of chemical and metallurgical engineers. A new 10,000 pound hydraulic testing unit and an automatically controlled testing boiler, capable of developing heat temperatures up to a thousand degrees F. and 2,000 pounds pressure, have been installed. Now nearing completion is a new heat treating furnace which will insure closer supervision and greater uniformity of the Grove high pressure regulators.

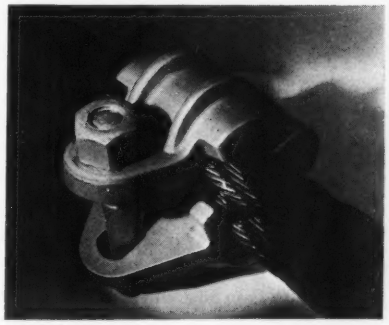
Batteries of new machines have been installed throughout the plant, and additional units are on order to facilitate still higher production capacities and faster output. A further addition which will increase the present floor area is contemplated.

Buck Clamp Offers Safe Low Cost Clamping Method

Buck Clamp Co., Houston, Texas, has placed on the market a new and improved means of clamping two pieces of wire line together. The Buck Clamp is being widely accepted in the field because of its numerous advantages, the makers say. It provides a greater gripping surface, greater clamping strength than conventional means and eliminates kinking of lines because both clamping surfaces are formed to fit the lay of the



wire, according to the manufacturers. Only one bolt is employed, meaning a saving in time and labor. Replacements are limited to this one bolt.



The Buck Clamp is cast from certified malleable iron (ASTM 35018) and is precision machined and individually tested.

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Oil Men's Calendar

Calif. Natural Gasoline Association. Los Angeles Chapter—Meets 1st Thursday Each Month, Barker Bros. Bldg., Los Angeles—Dinner at 6:00 (Optional). Taft Chapter—Meets Third Thursday Each Month.

American Society of Mechanical Engineers—Los Angeles Section—Meets 2nd Thursday Each Month—Barker Bros. Bldg., Los Angeles. Dinner at 6:30 (Optional).

March

17-22—Oil Burner Institute's National Oil Burner Progress Exhibition, Commercial Museum, Philadelphia, Pa.
25—Oil Trades Assn. of New York, annual meeting, Waldorf-Astoria Hotel, New York.

April

2-4—American Assn. of Petroleum Geologists, 26th annual meeting, Rice Hotel, Houston, Texas.
7-11—American Chemical Society, St. Louis, Mo.
17-18—American Petroleum Institute, Division of Production, Wm. Penn Hotel, Pittsburgh, Pa.
23-25 — Petroleum Industry Electrical Assn., Mayo Hotel, Tulsa, Okla.
23-25—Natural Gasoline Assn. of America, annual convention, Baker Hotel, Dallas.
24-25—National Petroleum Assn., Cleveland Hotel, Cleveland, Ohio.

May

5-8—American Gas Assn., Natural Gas Section, Dallas, Texas.
19-23—American Petroleum Institute, 11th mid-year meeting, Mayo Hotel, Tulsa, Okla.

June

23-27—American Society for Testing Materials, 44th annual meeting, Palmer House, Chicago, Ill.

November

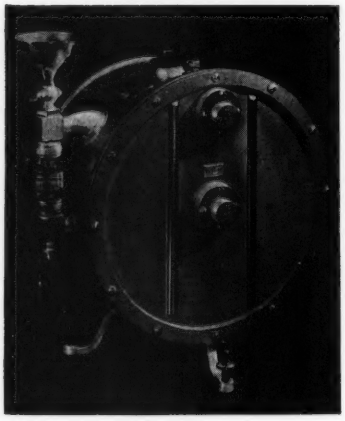
3-7—American Petroleum Institute, 22nd annual meeting, San Francisco, Calif.

Removable Back Head For Wet Test Meters

A removable back head has been designed by American Meter Co. for its wet test meters, in order to facilitate cleaning and easier access to the drum. When specified, any of the "American" A1-18 series of wet test meters for general laboratory testing and for calorimetry—including both the low pressure and the new high pressure models—now may be equipped with this new helpful device.

Its use is especially convenient where gas conditions make periodical washings advisable. First-hand inspection also is greatly simplified, so that corrosion and other effects may be observed more readily and the need for repairs lessened.

The improved back head assembly may be attached not only to new models but also to meters (with either flat or convex back heads) already in service.



Full description is given in the newly-revised "American" Catalog AG-3 on Wet and Dry Test Meters. A copy may be had by addressing American Meter Co., 60 East 42nd St., New York City, 2118 E. Atlantic Blvd., Los Angeles, or the office of that company nearest you.

Vastly increased efficiency of personnel, methods and equipment has halved the time required to drill oil wells in American fields.

Greatest potential markets for gas appliance manufacturers are the automatic water and house heating fields, engineers report.